THE

JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

[REGISTERED AS A NEWSPAPER.]

VOL. XXIII. No. 557.] LONDON, JANUARY 13, 1874. [26TH YEAR.] Price 6d.

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By use of which Man-lid, inlet and outlet pipes can be examined and cleansed without loss of gas in crown of holder, or ingress of atmospheric air.

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MANUFACTURERS OF

FIRE-CLAY GAS-RETORTS & FIRE-BRICKS,

Of every size and shape, and of the best quality; also of White and Coloured GLAZED BRICKS, SANITARY PIPES, &c., &c.

The F. I. Co. have the exclusive right to make and sell Fraser's Patent "Ribbed" Gas-Retorts in Fire-Clay.

In order to meet the constantly increasing demand for their Gas-Retorts, the F. I. Co. have recently made such an addition to their premises as will enable them to execute expeditiously the largest home or foreign orders.

Apply as above, or to the London Offices, 15, NEW BROAD STREET, E.C.

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TUBULAR GLAZED SEWERAGE PIPES, BENDS, JUNCTIONS, ETC.

FIRE-BRICKS, TILES, BLOCKS, AND CHIMNEY-TOPS.

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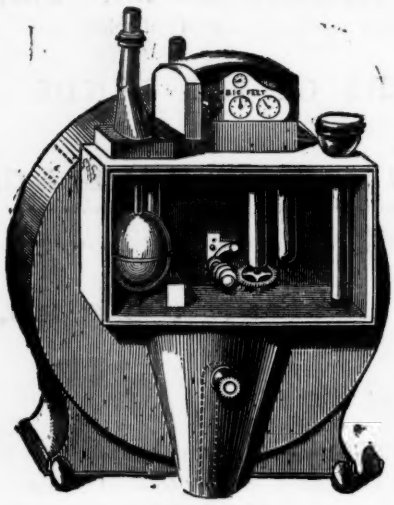


Front View.

THE

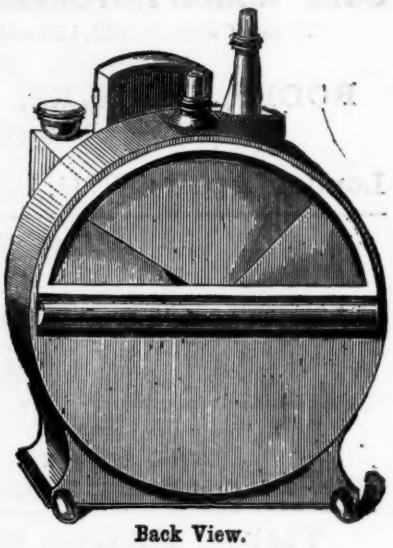
IMPERIAL

COMPENSATING

WET GAS-METER.

DE CASTRO & BURTON'S

PATENT.



Back View.

I. **This Meter is more simple in construction than the common non-compensating Meter.**
II. **An unvarying water-line is maintained.**
III. **No amount or kind of pressure will cause it to "flood."**
IV. **It is practically unaffected by "tilting."**
V. **The friction is less than in any other Meter; and**
VI. **It will last for twelve months without requiring to be refilled.**

THE IMPERIAL METER COMPANY, LIMITED, ALSO MANUFACTURE COMMON NON-COMPENSATING WET GAS-METERS OF ALL SIZES, BOTH IN TIN AND CAST-IRON CASES.

SPECIAL ATTENTION

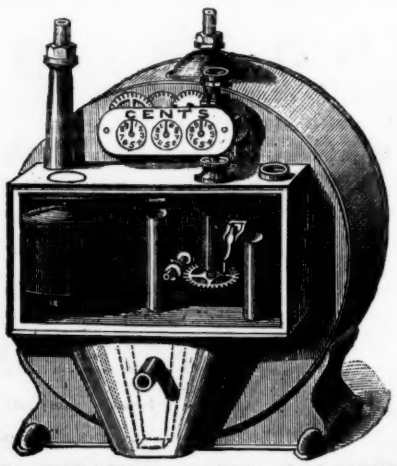
IS PAID TO THE

MANUFACTURE OF

STREET-LAMPS

AND

REGULATORS.



THE IMPERIAL WET GAS-METER.
Non-Compensator.

STATION-METERS

WITH PLANED JOINTS,

AND

GOVERNORS,

MADE TO ORDER

Mr. GEORGE MACKANESS will represent this Company in the Provinces.

OFFICES: 41, FLEET STREET, LONDON, E.C.

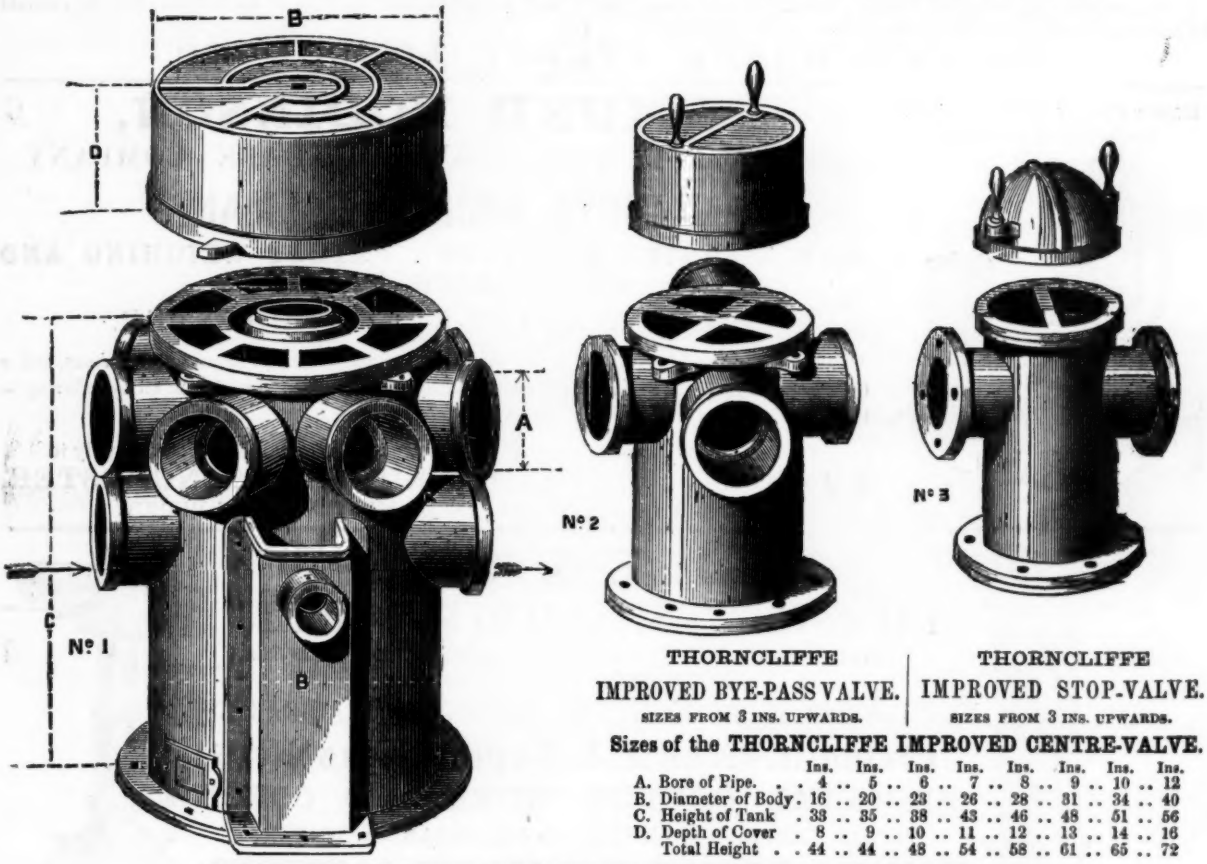
W. MOORE, Secretary.

☞ *All Communications to be addressed to the Secretary.*

MESSRS. NEWTON, CHAMBERS, & CO.,

THORNCLIFFE IRON-WORKS, NEAR SHEFFIELD.

IMPROVED CENTRE-VALVES.



THORNCLIFFE IMPROVED BYE-PASS VALVE. SIZES FROM 3 INS. UPWARDS.

THORNCLIFFE IMPROVED STOP-VALVE. SIZES FROM 3 INS. UPWARDS.

Sizes of the THORNCLIFFE IMPROVED CENTRE-VALVE.

	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.
A. Bore of Pipe. . .	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..	12
B. Diameter of Body .	16 ..	20 ..	23 ..	26 ..	28 ..	31 ..	34 ..	40
C. Height of Tank .	33 ..	35 ..	38 ..	43 ..	46 ..	48 ..	51 ..	56
D. Depth of Cover .	8 ..	9 ..	10 ..	11 ..	12 ..	13 ..	14 ..	16
Total Height . .	44 ..	44 ..	48 ..	54 ..	58 ..	61 ..	65 ..	72

In all cases the Covers are cast heavy enough to resist any required pressure.

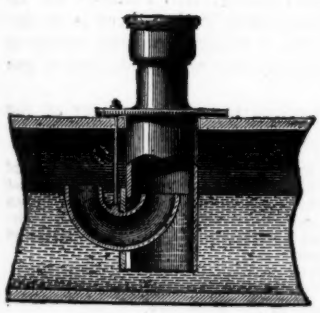
The advantages derived from the adoption of these Valves are so manifest and cardinal that in the immediate character of the change—the simplicity of the machine—the facility affording for cleaning out connexions between Valve and Purifier—the perfect collection and delivery by suitable overflow of the ammonia, at a greatly diminished depth from ground-line over the old form of Valve—the advantage of connecting on the same level, and at any angle, or opposite to each other, the inlet and outlet pipes without dip or rise—the clear acquisition of space in the purifying-house, by being able to place the boxes nearer together, the new Valve being entirely under the floor—and lastly, though of the greatest importance, the passage of crude and unpurified gas during the change is minimized to the merest fraction, thus preventing the fouling by impure gas the delicate machinery and easily affected exposed movements of the station-meter, thereby preventing the introduction of the enemy (unpurified gas) into the gasholder. Also a dead abutment is offered to all back pressure, imparting thereby to the gauges, governors, and hydraulic seals, a steadiness of action never realized with the once famous, but now fast becoming obsolete, Hydraulic Centre-Valve.

N., C., and Co. also Manufacture and Erect

PURIFIERS, CONDENSERS, SCRUBBERS, GASHOLDERS, ROOFS,

And every description of Gas Machinery.

TENDERS GIVEN FOR WORK FIXED COMPLETE IN ANY PART OF THE KINGDOM.



Messrs. N. C. & Co. are also the Sole Agents for

HAWKINS' PATENT SELF-ACTING DIP-PIPES.

These Patent Self-Acting Dip-Pipes are rapidly coming into general use by gas companies. By their use the whole of the pressure caused by the old kind of Dip-Pipes is entirely removed, therefore the yield of gas per ton of coal is considerably increased. They also act as a perfect safeguard against the deposit of carbon (or scurf) inside the retorts.

A saving of fuel is effected, and the wear and tear to the retorts greatly diminished.

They are also perfectly Self-Acting, they being regulated solely by the gas. They cannot get out of repair, and when once fixed, will last as long as the old kind, and can be easily adjusted should the hydraulic main sink; they can also be worked with advantage where there is no exhauster.

Testimonials can be had from Herbert Unwin, Esq., engineer of the Sheffield United Gaslight Company and the Penistone Gas Company. At both these companies works they have been in constant operation for several months. Further testimonials can be had on application to the Patentee, J. G. Hawkins, Effingham Street Gas-Works, Sheffield.

For Prices, &c., apply to

Messrs. NEWTON, CHAMBERS, & CO.,

THORNCLIFFE IRON-WORKS, near SHEFFIELD.

THE STEAM STOKER COMPANY, LIMITED,

ARE NOW PREPARED TO GRANT

LICENCES FOR THE USE OF THEIR VARIOUS PATENTS

FOR

STOKING BY MACHINERY.

UNDER one or the other of their Patents, Machines can be adapted to almost any existing works without material alteration of the Retort-Houses or Settings.

Applications, accompanied by full particulars as to dimensions of the Retort-Houses, Settings of the Retorts, &c., &c., should be addressed to the Secretary, at the Offices of the Company,

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LYON'S PATENT WEIGHING AND REGISTERING MACHINE.

EDMUND ROBINSON,

AGENT FOR THE COALBROOKDALE COMPANY

AND FOR

TANGYE BROS. & HOLMAN.

SOLE LICENSEE FOR LYON'S PATENT WEIGHING AND REGISTERING MACHINE,

104, KING STREET, MANCHESTER.

The advantages gained by using this Machine are Accuracy, Economy of Labour, and a Check upon Fraud. The work performed by a man in any given time is shown by referring to the Index.

Price £15 15s.

For further Particulars, and Copies of Testimonials from Gas Engineers, apply to

EDMUND ROBINSON, 104, KING ST., MANCHESTER,

TO WHOM ALL REMITTANCES MUST BE MADE DIRECT.

HODGE & CO.'S

IMPROVED VENTILATING SUN-LIGHTS

WITH TALC REFLECTORS AND SELF-ACTING VALVES

TO PREVENT DOWN-DRAUGHT;

VENTILATING GLOBE LIGHTS for DINING-ROOMS, LIBRARIES, &c.

Ormolu, Bronze, & Crystal Gaseliers;

MEDIÆVAL CHURCH WORK AND CORONÆ

COCKS, VALVES, and FITTINGS for GAS, STEAM, and WATER;

COLUMNS, BRACKETS, & STREET LANTERNS;

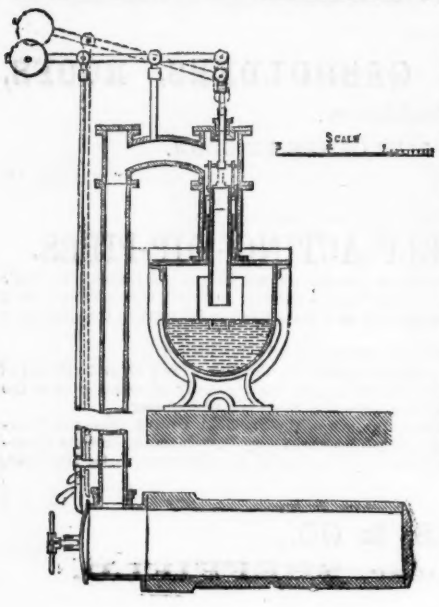
BLACK AND GALVANIZED BARREL COMPO AND TIN PIPE.

GAS ENGINEERS,

100, HATTON GARDEN, LONDON.

Drawings and Prices upon application.

CHANDLER'S PATENT DIP-PIPE.



It is well known by all Gas Managers that back pressure upon the retorts greatly retards the production of gas, causing a deposit of carbon which keeps steadily accumulating. Such carbon reduces the capacity of the retorts, requires extra fuel for heating, and has to be frequently removed by heavy iron bars, which very much injure the retorts. By the use of Chandler's Patent Dip all these evils are entirely remedied. When the retorts are being drawn and charged, the Dip-Pipe is sealed in the fluid of the hydraulic main. As soon as the lids are replaced, the Dip is raised completely out of the fluid, and the gas passes unrestricted to the holders. By running the exhauster to a level gauge, ALL PRESSURE IS REMOVED FROM THE RETORTS. The consequence is that there is no deposit of carbon, no need of scurfing, no extra fuel is required, a large saving of wear and tear and loss of time is effected, and a greatly increased production of gas per ton of coal is realized.

The following testimonial letter has been received from the manager of the Erith Gas-Works:—

Messrs. Chandler and Sons.

Gentlemen,—I beg to inform you that during last week I carbonized 18 tons 5 cwt. of Ravensworth Pelaw Coal in a single setting of retorts fitted with your Patent Dip-Pipes, and obtained a yield of 195,800 feet of gas, equal to 10,730 feet per ton, which is a considerably greater yield than I have been able to obtain before using your Dip. The single retort fitted with your Patent Dip, which has now been in use here upwards of four months, has been throughout, and is now, quite free from carbon.

I am, gentlemen, &c.,

Erith Gas-Works, Aug. 2, 1873. (Signed) D. VINCENT, Manager.

For terms of use and cost, apply only to the Patentees,

Messrs. CHANDLER & SONS, ENGINEERS AND CONTRACTORS,

YORK STREET, LONDON ROAD, SOUTHWARK, LONDON, S.E.

TANGYE BROTHERS & HOLMAN,

LAURENCE POUNTNEY LANE, LONDON, E.C.,

SOLE MAKERS OF

MORTON'S PATENT SELF-SEALING RETORT-LIDS,

WITH

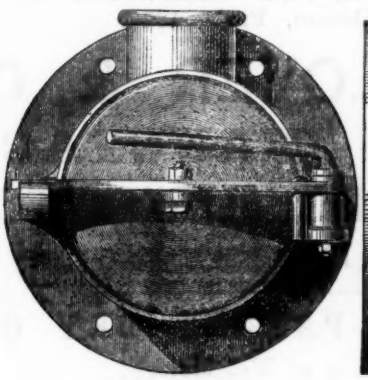
HOLMAN'S PATENT ECCENTRIC FASTENINGS.

OVER 7000 IN USE.

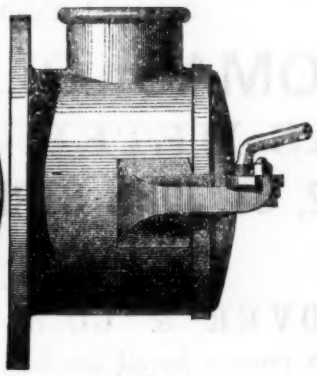
NO LUTING.

LIDS HINGED TO MOUTHPIECES; NO LIFTING ON OR OFF.

NO SCREWS FOR FASTENING.



FRONT VIEW.



SIDE VIEW.

SIMPLE.

ECONOMICAL

DURABLE

EFFECTIVE.

NO DUPLICATE LIDS REQUIRED.

These Lids are proved by many eminent Gas Engineers to be the most efficient, saving much time, labour, and expense; are opened and closed as quickly and with as little trouble as an ordinary furnace door, and by their use the Retorts are soundly sealed during the whole period of carbonization.

THESE LIDS ARE ADOPTED BY THE FOLLOWING (AMONG MANY OTHER) GAS COMPANIES:—

The Gaslight Company, Beckton (where over 2000 are in use).
„ Gaslight Company, Bow Common.
„ London Gaslight Company.
„ Independent Gaslight Company.
„ Phœnix Gaslight Company.
„ South Metropolitan Gaslight Company.
„ West Ham Gas Company.
„ Imperial Gaslight Company.

The Gas-Works, Royal Arsenal, Woolwich.
„ Alliance and Dublin Gas-Works.
„ Edinburgh Gas-Works.
„ Manchester Corporation Gas-Works.
„ Salford Corporation Gas-Works.
„ Rochdale Corporation Gas-Works.
„ Liverpool United Gas-Works.
„ Birkenhead Gas-Works.
„ Birmingham Gas-Works.

The Nottingham Gas-Works.
„ Newcastle-on-Tyne Gas-Works.
„ Carmarthen Gas-Works.
„ Merthyr Tydfil Gas-Works.
„ Ystrad Gas-Works.
„ St. Alban's Gas-Works.
„ Over Darwen Gas-Works.
„ Aylesbury Gas-Works.
„ Cardiff Gas-Works.

The Morton's Lid is made circular in form, that being the most convenient and suitable shape. It can be used for Retorts of an section, by adapting the Mouthpiece casting from the D, oval, or other shape, at the back, to circular in front.

The following important Testimonial, among others, has been given :—

The Gaslight and Coke Company. Engineer's Office, 6, Westminster Chambers, Nov. 14, 1871.

Dear Sir,—In reply to your inquiry, I have the pleasure of stating that the whole of the Mouthpieces at Beckton have Morton's Lids attached to them, and they have given us every satisfaction. We have 2160 in use.—I remain, yours truly, (Signed) F. J. EVANS.

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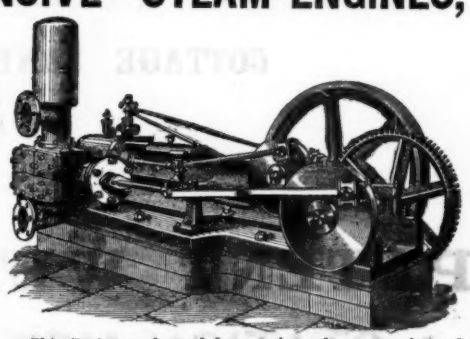

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		in.	in.	£ s.	£ s.	£
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C	3	5	10	38 15	3 15	—
D	4	6	12	46 0	4 0	10
E	6	8	16	70 0	5 10	12
G	8	9	18	90 0	6 0	13
H	10	10	20	115 0	7 10	14
J	12	12	24	135 0	8 0	15
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Engine and 3in. Pump	62	—	—	—	—	—
Do. and 4in. do.	68	75	—	—	—	—
Do. and 5in. do.	—	78	112	—	—	—
Do. and 6in. do.	—	89	117	135	160	185
Do. and 7in. do.	—	—	124	145	172	195
Do. and 8in. do.	—	—	135	160	185	205
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These Engines are adopted in Gas-Works at Haggerston (Independent Gas Company), Nine Elms (London Gas Company) Falmouth Harrow, Jersey, Plymouth, Richmond, Rochdale, Santiago (Chili), &c.

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All communications for the Editor, remittances for subscriptions, and orders for advertisements should be addressed to the publisher, William B. King, 11, Bolt Court, Fleet Street, London, E.C.

TO CORRESPONDENTS.

A GAS CONSUMER.—*We believe that you are wrong in your estimate. The gas of the Phœnix Company is, as a rule, fully up to the standard of that supplied by the South Metropolitan Company.*

THE JOURNAL OF GAS LIGHTING,
WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, JANUARY 13, 1874.

Circular to Gas Companies.

No further fall in the price of gas coal has been reported in the past week, and the cost for the present may be regarded as stationary. The reason is not appreciated by the public, who are expecting or hoping for cheaper gas. Coals adapted for gas-making are always in steady request. The fluctuations in the demand for those used in the metal and chemical trades are unknown in gas coals. For obvious reasons they went up in price together; but, having reached a high price, the coal which is ever in demand must always sustain that price better than a kind for which the request has fallen off. For this reason alone we cannot be hopeful of any decided fall in gas coal, and there are sufficient indications of a probable early revival in the iron trade, which makes us doubtful of a continued fall in the price of any kind of coal. When it is said that many new coal-fields are being opened up, it must be remembered that the coal they will yield is not of a kind to furnish good gas; and that cannel coal will never again fall in price.

The bogus Bill has been printed. It emanates, as we supposed, from the "London Gas Consumers Association," the members of which are innocent enough to increase the cost of gas to themselves by the amounts of their subscriptions to the association, and imagine they are conferring a public benefit, while they are only supporting a mischievous agitator. The Bill consists of but three clauses, which occupy half a sheet of foolscap paper. The second clause transfers all the powers of the several metropolitan gas companies to the Metropolitan Board of Works and the Corporation of the City of London, and authorizes these bodies to enter into agreements for the purchase of the companies undertakings, by arbitration or otherwise. The third clause is simply amusing. It proposes that all charges and expenses of or incidental to the preparing and obtaining of the Act are to be paid by the "London Gas Consumers Association"! It seems certain to us that Mr. Lowe could not have seen this Bill when he sent his inquiry to the Metropolitan Board. The Bill has advanced a stage farther than we expected, for it has been printed; but this effort having, we imagine, exhausted the funds of the association (unless Mr. Flintoff foregoes his salary—a very unlikely event), we do not expect to hear anything more of it. With regard to the equalization of gas-rates which would follow the passing of this or any other similar Bill, we notice a contemporary simple enough to believe that some would gladly pay sixpence more for gas in order that their neighbours might get it for sixpence less. We have never known any such characters. Everybody we ever knew rejoiced at exceptional privileges, and considered himself an injured individual if deprived of them.

We may mention here that a Coal Reform Association has been formed who require that Government shall fix the price of coal. They say that "warmth is as necessary to the people as "food and shelter," and, as others add, gas and water. They, therefore, ask the Government, or, say, the Municipality, to step in and ensure them cheap coals. The odd thing is that newspapers which are always attacking the gas companies, and demanding their confiscation, laugh at these poor people, and write learnedly to show them the error of their notions. We will quote one sentence from the *Daily Telegraph*: "It is not "because any one class of the community are engaged in pro-"ducing an article of '*daily and necessary use*' that they are to be "precluded by exceptional laws from the rise that naturally follows "an increased market value of the article produced." We shall be told, of course, by the economists that increased cost of production does not affect market value, which depends on supply and demand. But we have a right to use their argument against "exceptional laws." Allow a gas company to make 20 per cent. in good times, and they will be content with 5 in bad; but tie them down to 10 or 7½ per cent. at most, and that rate of profit they will certainly extort, whatever the circumstances may be. Coal reformers in Clerkenwell are denounced as Communists; gas reformers in Exeter Hall and elsewhere appear to us very like them.

The Air Gas Company, after a short career, lasting but little more than twelve months, has got into Chancery. Two petitions to have it wound up, one signed by the directors, and the other by two contributories, have been presented, and are to be heard before Vice-Chancellor Hall on the 16th inst. We shall reserve the comments that suggest themselves until after the hearing, which may produce some curious revelations.

The parish of St. George-the-Martyr, Southwark, entertain the notion of adopting the average meter system. We hope they will carry out the idea, and are satisfied that the gas companies will offer no opposition if the best plan be decided upon. That the parish will gain in the long run we have no doubt; but it must not be supposed that all the advantage will be on their side. If, as alleged at the vestry meeting, only 3 or 4 feet are consumed in some of the public lamps, there must be plenty of others in which 6 or 7 feet, or more, are burned. The Metropolis Gas Act, 1860, gives a local authority power to elect to burn by meter, and if they cannot arrange the terms with the company or companies, the differences must be referred to arbitration. As said above, we do not believe the companies will

make any objection if the vestry of St. George's decide on adopting the plan prescribed by the referees for the parish of Paddington.

The Bill promoted by the Birmingham Gas Company to increase their capital and erect new works is exciting some opposition in the borough, and strong objections are made against the site proposed for the works. We have again brought forward the repeatedly contradicted assertion that gas-works are dangerous to health. The very reverse is known to be the fact. Well-conducted gas-works are productive of no nuisance, and no "dangerous chemical emanations" escape them, and their neighbourhood has been proved, when epidemics have prevailed, to be exceptionally healthy. The worst that can be truthfully alleged against them is that they are unsightly—a matter of no consequence, one might suppose, in the outskirts of Birmingham. As usual in such cases, the question of purchase by the borough has cropped up; but, at the present moment, we believe the Corporation of Birmingham have enough on their hands, without being burdened with the gas and water undertakings.

Since the above was written, we have received notice that a special meeting of the Town Council has been called for this day, at which the mayor will move a resolution affirming that it is desirable that the manufacture, supply, and sale of gas in the borough should be under the control of the Corporation; and that the General Purposes Committee be authorized and instructed to negotiate terms for the purchase of the undertakings of the Birmingham Gaslight and Coke Company and the Birmingham and Staffordshire Gas Company, and to employ such professional and other assistance as they may deem necessary, reporting the result for the approval of the council.

FINANCIAL RESULTS OF THE TREATMENT OF SEWAGE.

The action taken against the Richmond Vestry by the Thames Conservancy Board, to compel the diversion of the sewage of the town from the river, calls our attention once more to the vexed question of the profitable disposal of the obnoxious material—sewage. For more than two years the vestrymen of Richmond have been talking over this question. They have had, we believe, plans for a sewage farm, plans for an intermittent filtration scheme, and also, we think, a plan for a defecation scheme. The vestry, however, have hesitated to adopt any one of these plans, and now find themselves sued for accumulated penalties to the amount of £5000. For this sum they might have laid out an extensive sewage farm, or they might have constructed effective filtering or precipitation works; but they have preferred to do nothing. The excuse, no doubt, is the expense and unprofitable nature of sewage works. For the present the hope of making any profit out of the disposal has vanished. It may be revived some day by some new scheme or process, but to-day "hope "is dead."

In confirmation, we may refer to a paper presented to the House of Commons in the last session, which did not, when issued, attract much notice. It is a "Return of the Names of "Boroughs, Local Boards, &c., which have, through Loans, pro-"vided Sewage Farms or other means for the Disposal of Sewage." As regards sewage farms, the return shows, among other things, the acreage per 100 of population, the character of the soil, the cost of the land and of laying out, the expenditure during the last year for which the accounts were audited, and the receipts for the same year. The names of 44 local authorities having sewage farms in England are returned, and it is curious to note the utter want of uniformity in their plans. Much discussion has taken place among authorities on the subject as to the quantity of sewage that can be profitably utilized on an acre of land. After thinking that sewage of average dilution from two persons was sufficient per acre, Mr. Mechi finally came to the conclusion that 12 persons to the acre was a proper proportion. Mr. Hope says 20 or 30, and others are of opinion that sewage, to yield a profit, must be used in large quantities, and that from 5000 to 7250 tons per acre, which represents the sewage from 100 and 150 persons, is not too much. According to this return, the quantity of land actually in use per 100 of population varies from 62½ acres at St. Nicholas, to 8-100ths of an acre at Swaffham. The average quantity is, perhaps, a little under an acre to the 100. The character of the soil differs of necessity, and thus we find sewage farms on every variety, from "stiff brick clay" to "very "porous sand"—these two being, of course, the very worst for irrigation. There is one point, however, on which the return shows almost absolutely uniform results, and that is the actual loss on the farms made, at all events, by the local authority. There are only three instances given in which the receipts exceed the expenditure for the year, and from the expenditure we exclude the money spent on repayment of loans. The most fortunate place appears to be Warwick, but in this case the amount stated as receipts for the year includes an estimate of the value of the standing crops. Swindon Old Town seems to have made a small profit on one farm. The rent of the Wolverhampton farm more than covered the expenditure of the year, but still it is only 2½ per cent. on the loan, which the Corporation probably contracted at 4 per cent. At Croydon the Local Board appear to lose by the farms, and we know that the lessee of one made a heavy loss. So far, then, sewage farming appears to yield very unsatisfactory results to local authorities. But this must be said: most of the undertakings are very young, and the art of applying sewage to the best advantage may be as yet ill understood. The oldest scheme in the country appears to be at Wilsden, where the sewage has been used to irrigate meadow or pasture land for 35 or 40 years, and there the Local Board pays nothing and receives nothing. The next oldest is Croydon, where the farms have been in operation 10 and 14 years; but the majority of the farms returned have only been in existence two or three years. On one point the return would seem to give very satisfactory information. Very few complaints of nuisance have been made with respect to the farms; but, unfortunately, with our knowledge of several of them, we cannot accept this as proof that no grounds of complaint existed.

Plans for the filtration of sewage, in order to render it inoffensive, recommend themselves to local authorities by the comparative inexpensiveness of the works, and we find that 54 Local Boards have adopted this mode of purification. The arrangements for the filtration are various. In some cases it is clear that the so-called filters are little better than subsiding tanks; but, in others, if the materials said to be employed are properly disposed, effective filtration should be produced. In any case, however, there seems to be no hope of making a profit by this mode of treatment. Sewage deposit evidently does not command a sale. At Ulverston, with a population of 7607, the year's sale produced £25, the works having cost £8400, and the expenses of the year being £35. At Fareham, with a population of 5000 within the drainage area, the deposit sold for £7; and at Morley, population 9607, it produced £6. At Lostwithiel, a small place and badly circumstanced, the sale of the soil brought eighteen-pence in four years. In 16 cases no receipts at all are stated. There is one case which we hardly understand. At Scothorne, where an excellent plan of filtering has been adopted, the deposit from 522 people appears to have brought £405. It cost, however, £328 to get. At Southam, population 1785, and evidently good filtration, the receipts amounted to £101; and the expenses were only £45. The sanitary results of this mode of treatment appear to be fairly good. Not many complaints of nuisance from effluent water have been made, and they do not appear to have been serious.

The last we have to notice are plans for the treatment of sewage with precipitants, which have been adopted by 30 local authorities. Under this head we have again places returned where it is clear only reservoirs for subsidence have been provided, but in the other cases real precipitants are employed, and, in most instances, lime alone is used. Precipitation by means of lime has been longest in use at Leicester, where the works cost originally £30,000. They were made over to the Local Board for nothing, so no interest has to be paid on borrowed money. The expenses of the year were, however, £1670, and the receipts £259. At Luton, where lime with some chloride of lime is used, the works cost £4250; the expenses of the year were £490, and the receipts £34 13s. 6d. At Alton the Local Board appear to have spent £65 2s. 8d. on labour, lime, and perchloride of iron, to obtain £3 14s. 0d. At Tottenham the Board spent £609, and received £45. These, we are sorry to say, are fair examples of the financial results of the treatment of sewage with precipitants; and, so far, they are not encouraging. The sanitary results appear to be better. Only two instances of complaint of the effluent water are returned, and one is characterized as "slight." We should have said that the expense of works adapted for this mode of treatment does not appear to be greater than the cost of filtering apparatus.

To return to our starting-point—Richmond. What is best to be done? Sewage farms, at all events in the hands of Local Boards, are expensive and unprofitable. Filtering works are comparatively inexpensive; but they, too, are profitless, and the sanitary results are not good. Precipitation by lime, if properly conducted, is not expensive, and the effluent water is devoid of offence. There could be no objection to turn such water into the Thames, especially if the free lime were neutralized. This would, of course, happen after travelling a very short distance in the river; but it would be better to effect the neutralization at the works. The plan would be equally well adapted to the other towns on the Thames, to which the attention of the Conservancy Board will soon be directed, even those above the intake of the water companies. If not a perfect remedy for all the evils com-

plained of, it offers a greatly ameliorated condition of things, effected at comparatively little cost, and while thus commended to the attention of the local authorities, we have no doubt it will command the sanction of the Thames Conservancy Board, who probably do not desire the complete exclusion of sewage water from the river.

WATER AND SANITARY NOTES.

We are glad that the Town Council of Liverpool have, by a very large majority, decided to proceed with the Bill to obtain further powers for the prevention of the waste of water. The matter has assumed a very serious aspect in the borough and neighbourhood, and if, at a future time, the Council should decide on another and larger scheme, such as tapping Windermere Lake, the question would be equally pressing. It must be remembered that a community is never benefited by an enormous waste of water. Windermere Lake might drain through Liverpool into the Mersey, as Loch Katrine is being drained through Glasgow into the Clyde, and the health and comfort of the population not be in the least improved. However abundant the supply, the best policy is, as far as possible, to check waste. It may be said without exaggeration that our water schemes are slowly—very slowly, it is true—changing the face of the country. They are, in fact, enormous systems of drainage, and care must be taken that they are not carried too far. The sinking of the level of Loch Katrine, the diminished volume of the Thames, and the fact that the level of water in wells is sinking every year all over England, may be strongly urged as proofs of the necessity for the prevention of waste.

In our last we mentioned that the Corporation of Nottingham had announced their intention to again oppose the Bill promoted by the water company. The object of the Bill, we presume, is the same as of that rejected last year—viz., to raise further capital to enable the company to supply some outlying districts. The great objection brought against the Bill is, that it will enable the directors to raise the new capital among the present shareholders. Why they should not do so we altogether fail to see. A successful manufacturer in Nottingham, who wished to extend his business by employing his accumulated savings, would be very much astonished if a stranger were to come to him and say, "You have "a good business. You are making large profits, and you want to "extend your business. You must let me put my money into the "concern." "No," the answer would naturally be; "I shall use "my own money, and secure the profits for myself." And we do not see why the proprietors of the water company should not do the same. They wish to extend their business, and they wish to do it with their own capital. The desire to prevent the extension of the company's supply to constantly growing villages around Nottingham is an exhibition of pure selfishness. The existing supply in these places is as bad as any in the country. Wells, it is true, are numerous, but they are seldom furnished with pumps, and the water is so bad, and the labour of getting it so great, that the inhabitants often prefer to fetch their water from springs half a mile from their dwellings. In some cases, too, they pay for this water as heavy a rate as they would pay to the company for water brought into their houses. The obstacle which the selfishness of the Nottingham Corporation places in the way of a supply of wholesome water to villages like Arnold, Beeston, and Bullwell, in all of which the inhabitants are anxious for the supply, is disgraceful to that body.

The notice of the East London Water Company of their readiness to give a constant supply of water to districts in Bethnal Green, Spitalfields, and Whitechapel, at certain dates in the present year, was duly forwarded to the Metropolitan Board of Works and referred to a committee, who have recommended "that no action be taken with regard to such notice." This recommendation was, of course, agreed to *nem. con.* We should have thought the Board might have taken the propriety of fixing hydrants into consideration; but this, possibly, is the duty of the vestries, who would decline to be dictated to by the Board. While alluding to the East London Water Company, we may mention that they have just re-issued their rules and regulations with respect to new houses now for the first time coming under supply, and as to fittings on the transfer of houses from intermittent to constant supply. We read with satisfaction that, by gradual amendment of the house-fittings, the waste in the district has been got under.

Air Gaslight Company.—Two petitions to wind up this company have been presented to the Court of Chancery. The first by two contributories—viz., Mr. John James Wilkinson, merchant, of Gracechurch Street, and Mr. Henry John Puckle, accountant, of Epsom; and the second by Sir John Murray, Bart., Philiphaugh, Selkirk; James Goodson, Kensington Gardens Square; William Jones, Adelaide Place, London Bridge; Josiah Wilkinson, Kingston-upon-Thames; John Ford Vesey Fitzgerald, Chester Square; Walter James Lloyd, Mincing Lane; and George Rudall, Brabant Court; who are the directors of the company. The petitions are appointed to be heard by Vice-Chancellor Sir Charles Hall, on Friday, the 16th inst.

Correspondence.

DAMAGE TO GAS-PIPES BY STEAM ROLLERS.

Sir,—In the letter you were good enough to insert in your paper of the 6th inst. on the above subject there are two or three typical errors. The sixth paragraph should read: "In fact, if the weight per inch of wheel and diameter be *equal*," &c., &c.

The seventh paragraph should read: "The rollers in use in London give a pressure per inch of breadth of about ·3 tons (6 cwts.)," &c., &c.

Please insert these corrections in your next issue.

9, *Victoria Chambers, Westminster, Jan.* 7, 1874. W. Clark.

TAR AS FUEL.

Sir,—In your Journal of Oct. 7 last you published a communication from me on the subject of burning coal tar as fuel. The following is as clear a statement of my process of burning tar as I am able to make:—I place on the top of the bench at one side of the retorts a vessel made of galvanized iron holding 10 or 15 gallons, with a cover fitting tight enough to keep out dirt and dust. Into this vessel I pump the tar from my tar well. At the bottom of the vessel is an outlet of ¾-inch pipe, which runs down the front of the bench to near the top of the lower retorts. This pipe has a stop-cock at some convenient place in it, to prevent the tar from running out of the vessel when it is not wanted for burning. At the bottom of the pipe, attached to it, projecting to the front, at right angles with the pipe, is a little appliance made of brass or composition metal, which looks more like an old-fashioned faucet for drawing cider or beer from a barrel, than anything else I can think of; it is about 4 inches long and nearly 1 inch in diameter. The success of the whole operation is in this little appliance. The tar comes into this appliance (I do not know any mechanical name for it), runs through it, and comes out of a small nipple on the under side, in a small stream, and falls into an elbow gas fitting on the end of a piece of ordinary gas-pipe, ¾-inch size, and is then carried by this last pipe over the lower retort (the pipe resting loosely on the mouthpiece), to a point above the middle of the furnace door. At this point I made a hole in the bench, about the size of two bricks, and inserted a piece of fire-brick, running inwards, over the fire, 12 to 15 inches, inclined downwards as it runs in. The tar passes on to this fire-brick and then runs in, and is at once on fire. The aperture above the fire-brick, in which the tar runs to the fire, needs to be large enough to allow a sufficient quantity of air to enter there to burn the tar. The coke fire below should be left to make a sort of mat, so that there will not be much draught of air through it. Till this body of coke and ashes, or mat, gets to be thick enough, some coke has to be put on the fire in the ordinary way, but not stirred up. The right size of the stream of tar to be burned is indicated by the smoke from the top of the chimney, which should be light and thin in quantity. This shows that the tar is all, or nearly all consumed. If the smoke is much more than above indicated, the size of the stream of tar flowing at the brass appliance should be checked, or the size of the aperture increased so as to let in more air. Burn tar enough to keep up the heat under the retorts, and let in air enough to burn it. The tar required is very nearly the smallest quantity which will run in the form of a stream.

And now as to a more particular description of this brass fixture. It is made with a piston running into its centre. On this piston is an oval head about half an inch in diameter, which is made to grind against a corresponding surface. The tar comes in between these two surfaces, and is ground so to speak. This grinding of the tar makes it flow evenly and without stoppage, and in that is the success of the whole operation. There is a set screw which regulates the nearness of these grinding surfaces to each other, and this also regulates the quantity of tar passing through. The screw is easily set, as occasion requires, by the thumb and finger.

As to the motion of the piston so as to grind the tar, there is an arm about three inches long attached to the piston, which is directly under its outside end, and extending down at right angles to the piston. The power required to lift a half-pound weight is more than sufficient, when applied to this arm, to give the piston all the motion required.

When I commenced to burn tar I had no engine, so I obtained the power and motion in the following manner:—I had a tank of water in the retort-house, from which the water was conveyed to my scrubber by a half-inch pipe, making a fall of six or seven feet in passing; I had an ordinary tinsmith to make me an overshot tin water-wheel with four inch length of buckets, 14 or 16 inches diameter. This wheel was set to run in a tin basin or trough. We then cut the pipe leading from the tank to the scrubber, and set the wheel so that the water, in passing, should fall on and turn it. The tin trough catches the water as the wheel turns, and a pipe from its bottom takes the water to the scrubber—it has simply turned this wheel while on its way. The shaft of this wheel is made of ⅜-inch iron wire, and has a crank on one end of 1¼-inch bend from the centre. To this crank I attach a small cord, and the other end of the cord is attached to the lower end of the arm, under the piston. As the wheel revolves, the crank draws the cord to the extent of the bend of the crank, and this pulls the arm just the same distance, and then, as the crank comes over on the turn of the wheel, the arm falls back to its upright position by its own weight, or a little weight attached, to be again drawn the same distance by the next turn of the wheel. The arm moving backward and forward gives a revolving motion to the piston, and effects the grinding of the tar as desired. To fit up for the purpose of burning tar, I went to a pump-maker of this city, and selected a pump of suitable size of bore, and had it specially fitted up with metal valves, so as to be able to pump the tar from the well into the vessel on the top of the bench. This pump cost about 20 dols.; the fixture which grinds the tar I had made for me by Mr. Patrick Clark, of Rahway, N. J., who is entitled to the credit of the idea of grinding the tar in this manner, and of the general make of the little composition fixture, though I changed it somewhat from the way he made it, which very materially improved its working. For this I paid him 10 dols.; the tar vessel on the bench cost 3 dols.; the tin wheel and trough cost 6 or 7 dols. This was all the money laid out, except for a single stop-cock. The men at the gas-works did the work of connecting the pipes, &c. This is the whole story. I hope that this information may be of benefit to the gas fraternity generally.

Charles Nettleton.

117, *Broadway, New York, Dec.* 27, 1873.

Legal Intelligence.

DUBLIN ADJOURNED QUARTER SESSION.—Tuesday, Jan. 6.

(*Before the* Recorder.)

EMBEZZLEMENT BY AN OFFICER OF THE ALLIANCE GAS COMPANY.

Joseph Fagan, late cashier in the employment of the Alliance Gas Company, was indicted before the Recorder for the embezzlement of various sums, amounting in the aggregate to £338, the property of the company.

Mr. J. Murphy, Q.C., prosecuted; and Mr. Monroe defended the prisoner, who pleaded "Guilty" to the indictment.

Mr. Murphy said the prosecutors were anxious that the mitigating circumstances which his learned friend, Mr. Monroe, would bring forward, should receive the fullest consideration. To that consideration the prisoner's long service of over 20 years, and his previous irreproachable character, certainly entitled him. He did not know what unhappy temptation had induced him to commit this fraud. He understood that he had entered into some unfortunate speculation, and had appropriated the money of the company with the hope and intention of restoring it.

Mr. Monroe submitted to the merciful consideration of the court the difficulties that had induced Mr. Fagan to appropriate the money, and his intention of restoring it, and also his long service in the employment of the company. There was another matter, too, to which he would respectfully direct the attention of the court. The prisoner had been examined by Dr. Tuohill, and a certificate given that he was suffering from incurable disease of the heart. Under those circumstances, and further considering that the loss of situation and character which the prisoner had sustained was in itself an almost sufficient punishment for the offence he had committed, he would respectfully ask the court to inflict as light a sentence as possible.

Dr. R. *Tuohill*, 6, Merrion Square West, deposed that he had examined the prisoner, and found him suffering from incurable disease of the heart, and that hard labour would be exceedingly injurious to him.

The Recorder, in delivering judgment, said it was on all sides granted that, prior to the time of this unfortunate transaction, the prisoner had borne an excellent character. It was a very sad thing that he should have committed such an offence. Those who prosecuted him joined with those who defended him in asking a mitigated punishment, and he was himself of opinion that the degradation which his offence had brought upon the prisoner was in itself a punishment of so grave a character that it could be little aggravated by any which the court could inflict. Having regard to the medical evidence, he would give the prisoner no hard labour, and, under all the circumstances, he believed the ends of justice would be satisfied by sentencing him to three months imprisonment in the Richmond Bridewell, dating from his committal.

HALIFAX COUNTY COURT.—Tuesday, Jan. 6.

(*Before Mr.* Gibbons *Deputy Judge.*)

SOWERBY BRIDGE LOCAL BOARD *v.* SYKES.

This was an action to recover from the defendant, who is a reed and heald maker at Sowerby Bridge, the sum of £5 14s., for gas supplied to one of defendant's tenants at defendant's request.

It appeared from the statement of Mr. Storey, who supported the claim, and from the evidence, that in July, 1869, defendant's tenant applied to the gas company for a supply of gas, but the company refused to supply it unless defendant would guarantee payment. The result was that on the 13th of July, 1869, the defendant gave to Robert Wood, an official of the local board, a note, on which was written, "Please let the tenant have gas, and there shall be nothing left on when the tenancy expires."

Robert Wood, formerly meter inspector for the local board, proved the above facts, and *Francis Slater*, and Mr. *Mackerill*, in the employment of the board, were called to prove what amount was owing. The case had been before the West Riding magistrates but was dismissed, they having no jurisdiction.

The case was adjourned for a fortnight for the production of a witness.

NEWPORT (MON.) POLICE COURT.—Friday, Jan. 2.

(*Before the* Mayor *and Mr.* R. F. Wollett.)

CONVICTION OF A GAS STOKER FOR INTIMIDATION.

Henry Harrison, a stoker in the employ of the Newport Gas Company, was charged with using threatening language to intimidate other stokers.

Mr. *Bryan*, the manager, appeared to support the information, and called the following witnesses.

Benjamin Wilcox, the head stoker, said there were ten stokers working by day and ten by night. At six o'clock on Saturday night, the 27th of December, he went to the works, and found only half the number of night men ready to start work. He went to look for the others, and in a public-house he found the defendant, who was intoxicated. Witness asked him if he was coming to work, and he said he should not that night; that there was not a man good for anything who would go to work, and that they had agreed to stop out. Defendant also said he did not care, the town might go in darkness. He then left him. Another of the men, named Slade, threatened witness, who went to look for a policeman. When he returned he met defendant at Mr. Bryan's door, and he said, "You'll have a —— job in there to-night."

Robert Ricks, a stoker, said on the night in question Slade went into the works and commenced to fight because he (Ricks) was there to begin work. Defendant came in, and he said to Slade, "Go into him, Jim." The reason for this conduct was a dispute about being paid double for working on Christmas Day. The night stokers thought they should be paid as well as the day men. All the men agreed to stop work if they were not paid. He met Captain Clarke, one of the directors, in the street, and stated the case to him. Captain Clarke promised to intercede for them, and told him they had better go to work, as he had no doubt it would be all right. Some of the night men then went to work, expecting that all would do so. Slade's object was to get them to stop work.

Thomas Draper said Slade came first to the work, and struck him, knocking him down. Defendant said there was not a man amongst those who had gone to work, and every man there ought to be drawn through the retort.

Defendant said he had nothing to say. He was the worse for drink, and did not know what language he used on the occasion.

Mr. *Bryan*, in answer to the Bench, said the dispute arose because the men who worked from 6 a.m. to 6 p.m. on Christmas Day were to be paid double. The night stokers thought they should be paid the same.

The Mayor (after a consultation) addressed the defendant, telling him he had rendered himself liable to three months imprisonment for threatening Thomas Draper. The bench would take a lenient view of his behaviour this time, in consequence of his previous good conduct, and he would be committed to 14 days days hard labour.

RICHMOND PETTY SESSIONS.—Wednesday, Jan. 7.

PROSECUTION OF THE RICHMOND VESTRY.

At the Richmond Sessions, on Wednesday last, application was made by letter from the solicitors to the Thames Conservancy for an adjournment of the summons against the Richmond Select Vestry for refusing to divert their sewage from the river. The ground of the application was the convenience of counsel retained (Mr. F. Meadows White). The application, being opposed by the other side, was refused.

Miscellaneous News.

METROPOLIS GAS SUPPLY.

Metropolitan Board of Works.

At the Meeting of the Board on Friday last—Mr. Dalton in the chair,

A deputation attended from the parish of Kensington, to present a memorial upon the subject of the proposal made by The Gaslight and Coke Company to raise the price of the gas supplied by them.

Mr. Freeman, who introduced the deputation, said unfortunately they had omitted to bring the memorial with them. It would, however, be sent in as soon as possible, and he would now move the suspension of the standing order, so that the memorialists might be allowed to express their views on the question.

The motion having been carried,

Mr. Gordon addressed the board on behalf of the deputation, and said that, prior to 1872, the district of Kensington was supplied by the Western Gas Company with 20-candle gas at 5*s.* per 1000 feet. In 1872 overtures were made by the Chartered Gas Company to amalgamate with the Western Company; and, by virtue of the powers granted to that company, they were enabled to carry out the amalgamation without first applying to Parliament for a special Act. The effect of this amalgamation was that the price hitherto charged to the inhabitants of Kensington—viz., 5*s.*—was immediately raised to 5*s.* 5*d.* per 1000 feet; but he contended that the intention of the Legislature, when the Act of 1868 was passed, was that the inhabitants should have the option of taking the inferior or lower price gas if they so thought fit. That privilege had, however, been set at nought, and, in addition to that, the inhabitants had been placed under the revision clauses of the 1868 Act, by which the Chartered Gas Company were enabled to apply to the Board of Trade for power to increase their price. Another reason why the inhabitants had cause to complain was that they formed part of a district that was supplied by a company which had unnecessarily increased its capital. Referring to the accounts of the several companies sent in to the Board of Trade, he contended that the Chartered Gas Company had a capital out of all proportion to the necessities of the supply, which capital was expended in a reckless and extravagant manner. In conclusion, he said that the inhabitants of Kensington now asked the board to exercise all their influence and all their power to prevent the gas company succeeding in the application of which they had given notice.

Mr. Freeman moved that the memorial (as soon as it was received) should be referred to the Works and General Purposes Committee for consideration and report.

The motion having been seconded, was agreed to.

The Works and General Purposes Committee made a report, in which they referred to a letter from the vestry of Kensington, transmitting copy of a report by their medical officer of health, as to offensive smell of gas arising from certain sewers at Notting Hill. The committee recommended that the solicitor be instructed to communicate with The Gaslight and Coke Company at once, requiring them to take immediate steps for discontinuing the discharge of their refuse into the sewer, and stating that, in case of their default, the board will take legal proceedings against them.

The Solicitor presented the following report on the reference to him, at the last meeting of the board, to advise whether, by implication or in express terms, the definition, "local authority," in the Metropolis Gas Act, 1860, had been repealed:—

"*Metropolis Gas Act*, 1860.

"At the meeting of the board on the 2nd inst., the following order was passed:—'That the solicitor do give his opinion in writing as to whether the following words in the 4th section of the Metropolis Gas Act, 1860, have been repealed, and, if so, by what statute:—"The expression 'local authority' includes the Metropolitan Board of Works, vestries, and district boards appointed under an Act of the session 18 & 19 Vict., c. 120, for the local management of the metropolis."

"I have carefully read the words of the order of the board of the 2nd inst., whereby I was directed to report as to whether the words 'local authority' included the Metropolitan Board of Works, the vestries, and district boards, appointed under an Act of session 18 & 19 Vict., c. 120, for the local management of the metropolis, mentioned in the Metropolis Gas Act, 1860, whether they have been repealed, and, if so, by what statute.

"I do not find that any portion of the section is even mentioned expressly and distinctly in any repealing section which I can find with a view to repeal.

"In the board's order no suggestion is made of what statute is supposed to contain any such repeal. I have read the two amending Acts, 1860 and 1861, and the City of London Gas Act, 1868, and the latter does, in terms, repeal several sections, but section 4 is not mentioned in terms. I have also read The Gaslight and Coke Company's Act, 1868, and the Imperial Gas Act, 1869, and this last repeals in terms several sections of the Act of 1860, but does not refer to the 4th section. I have also considered the South Metropolitan Gaslight and Coke Company's Act, 1869, and this repeals also, by reference, several sections, but The Gaslight and Coke Company's Act, 1870, does not mention the 4th section, nor does the same company's Act of 1871.

"I know not if the framer of the order had in his mind any other Acts to which it was needful to refer, or if it might be suggested that the tenor of any of the numerous provisions in all the above, or other Acts, may inferentially have repealed, or in some way enlarged, contracted, or modified the section specially pointed out for consideration.

"It may be, on a very full and close examination, that some such effect may have been given to some provisions, but before it would be useful to commence an examination again with this view, I think the board will desire to make me acquainted with the points which the examination should involve, for without such assistance, I might unintentionally mislead the board, or at all events wholly fail in assisting to explain what may be desired.

(Signed) "W. Wyke Smith."

On the motion of Mr. Leslie, it was agreed that this report should be entered on the minutes.

City Court of Sewers.

At the Meeting of the Commissioners of Sewers on Tuesday, the 6th inst.—Deputy Farrar in the chair,

The following communications were read, viz.:—A resolution of the Aldgate Wardmote, expressing their request that the commissioners will use their best efforts to oppose the gas companies in their expressed intention to seek powers to increase the price of gas. A resolution of a meeting of ratepayers of St. George's, Hanover Square, expressing their intention to request their vestry to oppose the gas companies in their application to the Board of Trade. A letter from the Chartered Gas Company, signifying that they would do their duty, and continue to light the public lamps as usual, leaving the question of price only open; to which was added a notice of their intention, in pursuance of the City of London Gas Act, 1868, to apply to the Board of Trade to appoint commissioners to revise the illuminating power and price of gas to be supplied by the company during the year 1874.

Mr. Jesse Turner asked what the court intended to do in the public interests with regard to the proposed increase in the price of gas.

The Chairman replied that the commission was not the authority to deal with the matter, as there was a special committee of the corporation for the purpose. The court might, however, authorize any person to attend the inquiry in the interests of the public.

Mr. JESSE TURNER then gave notice of a motion dealing with the matter, and it was arranged that the reading and consideration of the communications above mentioned should be deferred until Mr. Turner's motion came on for discussion.

HACKNEY VESTRY.

The Monthly Meeting of this Vestry was held on the 2nd inst.—Mr. Churchwarden KELDAY in the chair.

Mr. JOHNSON moved—"That in the opinion of the vestry the application of the several companies, including the Imperial Company, to the Metropolitan Board of Works for a revision of the price of gas, with a view to fixing the future rate of charge, are unwarrantable and unjust, and also that it approves of the action of the Metropolitan Board in opposing such application." He said that the existing state of circumstances did not necessitate or even justify the movement on the part of the company, who had for a considerable time past been making their customers pay expenses that ought properly to be paid out of the profits arising from their own operations. The Chartered Company had invested the sum of £30,000 as a fund for the insurance of their property, and this had not been paid out of their authorized profit of 10 per cent., but out of the profits over and above that which ought properly to have gone towards decreasing the price of gas. The law defining the relative positions of the companies and the public was an unrighteous and unjust Act, for the consumers were called upon to pay expenses resulting from the neglect of the companies themselves. He found that £5000 had been charged as loss in consequence of the stokers strike, and this it was proposed should be paid not out of the 10 per cent. of profits, but out of the profits over and above that amount; in other words, that it should be paid by the customers and not by the companies. The vestry might remember that upon the occasion referred to the whole of London was left in a state of darkness, and it appeared to him that it would have been no more than right that the companies should have given some recompense to the local authorities for the condition of things that then prevailed, instead of making an increased demand upon them in consequence. Some time since some of the residual products obtained in the manufacture of gas, which were now selling at high prices, were not only valueless, but had actually to be carted away at the expense of the companies, and he believed that he was right in asserting that at Haggerston works a large pit was dug for the purpose of burying coke, for which no market could be found. The principal reason assigned for the proposed increase in the charge for gas was the enhanced price of coal, but it must be remembered that this was counterbalanced by the enhanced value of coke, which had recently been sold at from 20s. to 25s. a chaldron. It should also be remembered that in making gas 12 cwt. of coke was obtained from a ton of coal. At the last inquiry upon this subject before the Board of Trade Commissioners, Mr. Stevenson, who was employed on behalf of the consumers, stated that the accounts submitted by the gas company, whose application was then dealt with, were calculated rather to confuse the question, and that they had supplied no information which would enable him to come to any definite conclusion as to what the proper selling price of gas should be. The Metropolitan Board of Works had at one time attempted to obtain the control of the gas supply, but from some cause or other the attempt met with so much opposition that they were compelled to abandon it. He sincerely hoped that the hands of that body would now be strengthened, and that they would yet be enabled to render good service to the public in regard to this matter.

Mr. LONG having seconded the motion,

Mr. BOWSER expressed a hope that before long gas companies and water companies would cease to exist in the metropolis, and that their operations would be carried on by the Metropolitan Board of Works. He was not generally an advocate for Government interference in local concerns, but it did appear to him wrong that the public should have to depend upon private speculators for the supply of such things as water and gas.

Mr. COX, referring to the evidence given by Mr. Stevenson before the las commission, said he was dissatisfied with his answers, which he thought were over cautious. As to the Act of 1868, he denounced it as a fraud, a sham, and a delusion. By this measure the companies were entitled to a reserve fund, besides which they were empowered to charge such a price as would enable them to pay a yearly dividend of 10 per cent., unless it could be shown that they had not exercised due care in the management of their business. Every effort would be made by the Metropolitan Board of Works and the Corporation of the City of London on behalf of the consumers, but he was afraid they would only succeed in limiting the amount of the increase. He had been reluctantly forced to the conclusion that no Act of Parliament could be passed that would prevent these giant monopolies becoming oppressive, and he sincerely trusted that before long the supply of gas and water to the inhabitants of the metropolis would be transferred from the companies and placed in the hands of some municipal body.

Mr. GANE moved, as an amendment, that the matter be referred to the Parliamentary Committee for inquiry and report. The reason he assigned for making this proposal was a conviction that many of the assertions that had been made in the course of the discussion would not bear investigation. It was well known that the prices of coal, iron, other material, and labour had largely increased lately, and if 3s. 9d. per 1000 feet was a fair price for gas two or three years ago, it seemed to him that it could not be sufficient at the present time.

Mr. DELL seconded the amendment.

Mr. HOLNESS said that the price of the £100 shares of the Imperial Company was now quoted at £157, and the bonds at £200. In such a position he could but think they were justified in applying to the Board of Trade for relief. Some months ago a party of stokers were committed to prison on a charge of conspiracy against the company who employed them. The company now appeared to be conspiring against the public, and if the law was equally administered ought to be subjected to the same punishment.

After a short reply from Mr. Johnson, the amendment was withdrawn, after which the original motion was carried unanimously, and it was ordered that a copy of it be sent to the Metropolitan Board of Works.

ST. PANCRAS.

The "Gas Consumers Protection Association," recently formed in this parish, held a meeting on the 5th inst., which was very meagrely attended. As it was resolved to wait upon Sir Sydney H. Waterlow, Bart., a resident of the parish, to ask him to accept the presidency of the association, and in the event of his declining to wait upon Mr. Shoolbred, Mr. Heal, Mr. Maples, or some other large gas consumer, with a view of urging one of those gentlemen to accept the post of president, it is to be assumed that Sir Thomas Chambers, M.P., who had been invited to this distinction, has declined the proffered honour. The objects of the association are defined to be "to oppose by the most efficient means the present application to the Board of Trade by the Imperial Gas Company for power to raise the price of gas to the consumers, and to watch any measures which might from time to time be introduced into Parliament affecting the interests of the gas consumers of the metropolis, and to use means to protect the interests of the consumers from any further extension of the monopoly already existing for the manufacture of gas. It was agreed that the association should consist of an unlimited number of members, who should subscribe not less than 1s. per annum to be devoted to defraying the expenses of the association; that a general committee, consisting of 100 members, be elected, out of which an executive committee of 25 be appointed, and that the officers should be elected annually at the general meeting of the members. Mr. Bennett, a late vestryman, was appointed collector, on a commission of 10 per cent. on sums below £1, and 5 per cent. on sums above tha amount. He was also appointed as sub-secretary, the remuneration for which will have to be determined at a future meeting, as the duties were not defined and the amount of labour they would involve was not known.

ST. PANCRAS VESTRY.—At the meeting of this vestry on the 7th inst., the General Purposes Committee reported that they had, pursuant to the instruction of the vestry, forwarded a memorial to the Metropolitan Board of Works, urging the board to use every effort to prevent the proposed increase in the price of gas. They recommended that they should be authorized to take any action they may consider necessary to oppose the intended application of the Imperial Gas Company to the Board of Trade. A communication was received from the Metropolitan Board of Works, stating that it was their intention to leave nothing untried to prevent the gas companies succeeding in their application, and requesting the vestry to obtain such evidence as they could to assist them in the work.

ST. PANCRAS GUARDIAN BOARD.—At the meeting of this board on the 8th inst., a letter was read from the Local Government Board, in answer to an inquiry from the guardians as to whether they could legally pay fees to counsel to appear on their behalf before the Board of Trade to oppose the application of the Imperial Gas Company for power to increase the price of gas. The letter stated that, in the opinion of the Local Government Board, the guardians had no authority to expend the funds under their control in any such proceedings. They, however, saw no reason why the guardians, being customers of the Imperial Gas Company, should not prepare a memorial and forward it to the Board of Trade, where no doubt it would receive due consideration. The chairman said the guardians need not be under any apprehension about the matter, as the Metropolitan Board of Works had determined to vigorously oppose the application of the gas company before the Board of Trade.

PADDINGTON.—At the meeting of the vestry on the 6th inst., the Gas and Water Committee submitted three names out of a list of 17 candidates for the appointment of inspector of public lighting. These names were put to the ballot, and Mr. S. Weston, who is the accountant in the parish surveyor's department, was elected by a large majority. A communication was read from the Metropolitan Board, stating they were going to vigorously oppose the application of the gas companies for an increase in the price of gas, and requesting the vestry to send the names of any person who would give evidence on behalf of the consumers. The communication was referred to the Gas and Water Committee.

ST. GEORGE-THE-MARTYR VESTRY.—At the meeting of this vestry on the 6th inst.—Mr. Pocock in the chair—Mr. Bayley, pursuant to notice, moved—"That the Roads Committee be requested to consider and report upon the average meter system of supplying the public lamps with gas." He said it was felt on all hands that the gas question, as affecting the public lighting at the present time, was a most important one, but it was not generally known that under the Gas Act of 1860 the gas companies were compelled to supply gas to the public lamps by measurement, and be paid at per 1000 cubic feet of gas actually consumed. To show the importance of this question, he would lay before the vestry a few facts with regard to other parishes, and if these facts were equally applicable to St. George's, it was quite clear very considerable saving might be effected. They had in this parish 594 lamps, for which was paid as follows:—Phœnix Gas Company, 406 lamps, £4 5s. each; London Gas Company, 109 lamps, at £4 19s. 6d. each; South Metropolitan Gas Company, 79 lamps, at £4 4s. each—making a total amount of £2520 4s. 1d. paid during 1872. It was in the power of vestries under the Gas Act of 1860 to require the gas companies to supply the gas by meter. It might, however, be that in their charge of £4 5s. the companies were doing themselves an injustice, in which case the vestry would, in the meter system, have to pay more; but it would, at all events, be acting on the sound commercial principle of paying for what they had had. In the parish of St. George-the-Martyr, he said, there were 549 lamps, costing £4 5s., £4 19s., and £4 4s. per lamp per annum respectively, according to the company who supplied, making a yearly total of £2520, and he believed that by the meter system nearly £500 a year could be saved. In Dublin, for instance, the result had been most important, and even startling, since the total amount saved during five years under the meter system had been £18,986 18s. 6d.; while at Nottingham there had been 5s. 4d. in the pound difference in the rate. At Paddington the saving, if they adopted the system, was estimated at £2112 per annum, and at St. Pancras £3000. Recurring to the price, £4 5s., paid by St. George's, Mr. Bailey said that reckoning the price of gas at 3s. 9d. per 1000 feet, £4 5s. would represent 22,666 feet of gas, to which they were entitled for every lamp per annum; and as it was agreed that 5 cubic feet per hour should pass through every lamp, 22,666 feet would represent 4533 hours as the time that the lamps were burning throughout the year, or an average of 12·55 (or 12½) hours per night all the year round—quite in excess of what was necessary. He contended, however, that 5 cubic feet of gas were not consumed per burner per hour as agreed upon, but only 3 or 4 cubic feet, and that in St. Pancras the quantity passing through the burners had been measured and found to be only 3·6 cubic feet; in Tottenham Court Road, 3·42; in other places, 3·99 to 4·65 cubic feet per hour. The next point to which he wished to draw the attention of the board, was the time during which the gaslights were burning; which, instead of averaging 12 hours per diem, was only 8, 9, or 10 hours, according to the season of the year. In Liverpool, where the lighting was entirely in the hands of the Town Council, the lamps were only alight on an average 8·92, or nine hours per night, and Liverpool was admitted to be a model of a well-lighted town. If, therefore, nine hours per night were sufficient, it followed that, during the year, St. George's was wasting on its 594 lamps 3,794,175 feet of gas, which, at 3s. 9d. per 1000, represented an annual waste of £711 4s. 10d., and they might rest assured that the public paid for this waste, either in money or in a deteriorated quality of gas.

Mr. MILLARD seconded the motion.

Mr. MARTIN said he had measured the quantity of gas passing through one of the street-lamp burners, by having one unscrewed and placed on a bracket, and found that in 29 hours only 104 cubic feet of gas were consumed, so that the vestry were paying for what they did not receive.

The motion was carried.

EXPLOSION OF GAS AT THE ROCHDALE WORKS.—An accident happened to the governor at these works early last Tuesday morning, causing an escape of gas and a subsequent explosion, by which damage to the amount of about £50 was occasioned. The town was thrown into darkness for a short time, and the mills ceased working for about an hour.

DANGER OF WET COAL.—People who prefer wetting the winter's store of coal to the dust on putting it in their cellars do not, we believe, generally know that they are laying up for themselves a store of sore throats and other evils consequent upon the practice. But so it is said to be. Even the fire-damp which escapes from coal mines arises from the slow decomposition of coal at temperatures but little above that of the atmosphere, but under augmented pressure. By wetting a mass of freshly broken coal and putting it into a warm cellar, the mass is heated to such a degree that carburetted and sulphuretted hydrogen are given off for long periods of time, and pervade the whole house. The liability of wet coal to mischievous results under such circumstances may be appreciated from the circumstance that there are several instances on record of the spontaneous combustion of wet coal when stowed into the bunkers or holds of vessels. And from this cause, doubtless, many missing coal vessels have perished.—*London Medical Record.*

METROPOLIS WATER SUPPLY.

The following are the returns of the Society of Medical Officers of Health relating to the average composition and quality of the metropolitan waters in the year 1873:—

Names of Water Companies.	Total Solid Matter per Gallon.	Oxygen required by Organic Matter, &c.	Nitrogen.		Hardness.	
			As Nitrates, &c.	As Ammonia.	Before Boiling.	After Boiling.
Thames Water Companies.	Grs.	Grs.	Grs.	Grs.	Degs.	Degs.
Grand Junction	19·67	0·073	0·133	0·002	15·2	3·6
West Middlesex	18·77	0·035	0·135	0·001	14·6	3·4
Southwark and Vauxhall	19·41	0·067	0·122	0·002	15·0	3·6
Chelsea	19·29	0·079	0·123	0·002	15·0	3·6
Lambeth	19·28	0·073	0·117	0·002	14·9	3·6
Other Companies.						
Kent	28·25	0·007	0·224	0·000	21·0	5·8
New River	19·13	0·033	0·134	0·000	14·9	3·3
East London	19·55	0·055	0·153	0·001	15·0	3·9

Note.—The amount of oxygen required to oxidize the organic matter, nitrites, &c., is determined by a standard solution of permanganate of potash acting for three hours; and in the case of the metropolitan waters the quantity of organic matter is about eight times the amount of oxygen required by it.

The saline constituents of the Thames water have averaged a little more than 19 grains per gallon; the range in the proportion during the year having been from about 22 grains per gallon in February to about 17 grains in September. The same has been the case with the water supplied by the New River and the East London Companies, while that from the deep chalk wells of the Kent Company has nearly always contained about 28 grains of saline matter per imperial gallon. In all cases the chief constituents of the water have been carbonate of lime, with a little carbonate of magnesia, sulphate of lime, chloride of sodium, and nitrate of magnesia. The chloride of sodium in the Thames supply has averaged about 1·8 grain per gallon, in the chalk water 2·6 grains, while the proportion of nitrogen as nitrate has been about 0·22 per gallon in the last-named water, and about 0·13 in the others—the nitrogen as ammonia (actual and organic) being almost nil in the Kent water, and less than the one-hundredth part of a grain in that of the other companies. The proportion of organic matter in the water has therefore been small, for whether it be estimated by the organic nitrogen, or by the amount of oxygen required to oxidize it, or by the loss on incineration, it has always been less than three-quarters of a grain per imperial gallon.

The hardness of the water has ranged from 21 degrees in the case of the Kent water, to about 15 degrees in that of the other companies; and this has been reduced to 5·8 degrees and 3·6 degrees respectively by boiling the water for a quarter of an hour.

As regards turbidity, it has been found that on examining the water in large volume, as in a glass tube two feet in length, the water of the West Middlesex, the New River, the East London, and the Kent Companies, has at all times been bright and nearly colourless, whereas that of the other companies has frequently been a little turbid from imperfect filtration.

The average quantity of water supplied daily by each of the water companies, has been as follows:—

Water Companies.	Gallons per Diem.	Number of Houses.
Grand Junction	11,543,521	34,176
West Middlesex	9,401,316	44,811
Southwark	18,275,892	79,332
Chelsea	8,234,950	28,295
Lambeth	12,088,933	49,630
Kent	6,558,360	41,968
New River	24,629,917	121,304
East London	22,484,976	104,560
Total	113,218,365	504,076

The smallest daily supply (101,041,928 gallons) was in February, and the largest (126,240,210 gallons per diem) in August, so that the supply has ranged from 30·5 gallons per head per diem to 37·7 gallons; the average for the whole year being 33·7 gallons.

HY. LETHEBY, M.B.

At the Meeting of the Metropolitan Board of Works, on Friday last, the Works and General Purposes Committee, in their report, stated that they had considered the letter from Messrs. Bircham and Co., transmitting notice by the East London Water-Works Company of their proposal to give a constant supply of water within a certain area in the parishes of Bethnal Green, Spitalfields, Shoreditch, Whitechapel, St. Botolph Without, and the Liberties of Norton Folgate and the Old Artillery Ground, and they recommended that no action be taken with regard to such notice. The recommendation of the committee was agreed to. A letter was read from the East London Water-Works Company, submitting a statement of facts with regard to the operations of the company in giving a constant supply of water in portions of the parishes of Bethnal Green and Shoreditch. A letter was also read from the Chelsea Water-Works Company, in reply to this board's letter, stating that they were unable to reduce the rate of charge per 1000 gallons for the water supplied to the Victoria Embankment; but that they were willing for the future to charge for the supply by measurement of surface, at the rate of 5*s.* per 100 square yards. The letters were referred to the Works and General Purposes Committee.

GAS SUPPLY OF HULL.—The report of Mr. Baynes for the month of December last states that the mean illuminating power of the gas supplied by the British Gas Company, in the Sculcoates and Myton district, was exactly 14¼ candles. During the past half year 81 examinations of the gas have been made in respect of light-giving power, and 30 quantitative tests for chemical purity. The gas has continued to maintain a very uniform rate of illuminating power, the range being only about a candle, with the exception noted on the 4th and 5th of October, it has at all times been free from sulphuretted hydrogen and free ammonia. The experiments were made as usual with Sugg's standard burner. Since the early part of December the day pressure has been increased to about 9-10ths, which will give an ample supply to properly constructed gas stoves for heating and cooking purposes, and be a great public convenience, although in the outset it will probably be a loss to the gas company. No doubt the day consumption will steadily, perhaps largely, increase when the comfort, convenience, and economy of gas for heating and cooking is better understood and illustrated.

	Max.	Min.	Mean.
Illuminating power standard sperm candles	14·80	14·13	14·50
Six months	14·90	14·24	14·56
Grains of sulphur per 100 feet	29·70	20·30	25·80
Six months	28·09	22·23	25·72
Grains of ammonia per 100 feet	—	—	0·50
Six months	·60	·50	·55

Mean barometer and temperature in experiment room—bar., 30·30; temp., 56°.

ALLIANCE AND DUBLIN GAS COMPANY.

MEETING OF THE DUBLIN CORPORATION.

The Monthly Meeting of the Dublin Town Council was held on Monday, the 5th inst.—the LORD MAYOR presiding.

The TOWN-CLERK read a report by the Corporation Gas Committee, which contained the reply of the Alliance Gas Company to the proposition made to them for the purchase of their undertaking. The committee proposed as the consideration for the purchase, sale, and transfer of the entire gas undertaking to the corporation, with all its mains and property of every nature and kind whatever, an annual interest of £5 per cent. per annum, payable half yearly, upon the paid-up capital of the company, the corporation taking over with the undertaking the debenture debt and other liabilities of the company. The directors of the Alliance Company, through their late secretary, Mr. Stevenson, refused this offer.

Mr. BYRNE moved that the report be inserted on the minutes. The Corporation had made an offer to the directors of the gas company which they refused in the peremptory way just stated, without making any proposition of their own. The reasons which moved the committee to make the offer were these:—The present circumstances of the whole question were totally different from what they were last year, because the company had contracts then made which would have enabled them to pay 6 per cent. and have a large profit besides. But in consequence of the law being such that when a company managing their works fairly and properly were not enabled, owing to the high price of materials and labour, to pay a dividend of 5 per cent. to their shareholders, they could apply to the Board of Trade, who would give them such a price for the gas supplied to the city as would enable them to pay 5 per cent. The corporation in the same way would be enabled, regardless of the cost of labour and materials, provided they managed it well, to get such a price as would enable them to pay 5 per cent. Therefore the transaction would be perfectly safe. As the council were already aware, the gas company, in October or November last, made an application to the Board of Trade to open an inquiry as to obtaining an increased price for gas, and the Board of Trade in consequence of the resignation of the directors being before the shareholders and accepted, and the election of a new board being imminent, refused to grant any such inquiry. But the citizens had to face this, that the existing directory would be enabled to go before the Board of Trade and get an increased price for their gas, in the same manner as the corporation would if the agreement had been entered into for taking over the concern. The matter had assumed a new phase since. The gas company had promoted a new bill, and the corporation had also promoted a bill, and the question was at present in a state of negotiation; and, therefore, what ought to be done was neither to adopt nor reject, but to enter the report on the minutes and await further steps.

Mr. DENNEHY seconded the motion. The gas company were about to go before Parliament to promote a bill; and unless great care was taken by the representatives of the citizens here and by the citizens themselves, the people of Dublin would have to pay a price for gas hereafter that might be a very serious addition to their charges. The corporation must go before Parliament to see that the clauses in the bill promoted by the company were not injurious to the citizens at large.

The motion was put and carried.

Mr. DENNEHY stated that as the council would shortly have to deal with an elaborate report from the Gas Committee, he would withdraw for the present his notice of motion, that the corporation should not proceed with the gas bill of which they had given notice.

A special general meeting of the Alliance and Dublin Consumers Gas Company is called for the 21st inst., to consider the provisions of the bill about to be submitted to Parliament by the directors, and an extraordinary general meeting will be held immediately afterwards for the purpose of confirming the arrangements made with the late secretary of the company (who had been in their service for 30 years), and also with his successor. The directors have issued a circular to the shareholders, in which they state that the Corporation of Dublin are still desirous of obtaining the transfer of the company's undertaking, and with that view have given notice of their intention to promote a bill in the ensuing session of Parliament for the purpose of enabling them to acquire the works of the company, either by compulsion, agreement, or arbitration. The directors, fully sensible of the value of their property, are resolved not to allow it to be sacrificed, and in view of the action taken by the corporation, the board feel it all the more incumbent upon them to put themselves in a position to protect the interests of the shareholders, and are, accordingly, taking every step which they consider calculated to assist them in doing so. The directors think it right to add, that the Gas Committee of the corporation have made a proposal to them to take over the company's undertaking on the basis of a guaranteed interest of 5 per cent. per annum on the paid-up capital, and that they considered the offer so inadequate, and so much below the real value of the undertaking, that they at once refused to recommend it to the shareholders. The directors are doing everything possible to render the company profitable and prosperous, and, fully confident that their efforts must be successful in due time, they felt they would not be justified in submitting to the shareholders such an inadequate offer for the transfer of their property as that above referred to from the Gas Committee of the corporation.

WASTE OF FUEL IN DOMESTIC CONSUMPTION.—Mr. F. C. Danvers, in a paper just published in the *Journal of Science*, on "Economy of Fuel," remarks:—"Nothing could be more extravagantly absurd, from an economical point of view, than the present system of open fire-places, and the method of setting them. From published returns of the year 1872, it appears that, taking the statistics of the metropolitan district as a guide, on an average, 12¾ cwts. of coal is consumed per annum for each person of the population, for domestic services. In the preceding year, the average was slightly higher, but prior to that it was below that average; so that it appears, in the use of fuel for domestic purposes, so far from there having been any attempt at economy, the reverse has been the case, and this increasing extravagance has only been temporarily checked by recent high prices. The common practice in house-building is to put the fire-grate immediately below and within a chimney; and, as this chimney is formed of brickwork, by no possibility can more than the most minute amount of heat be communicated from the chimney to the room. The main part of the conducted heat of the fire inevitably goes up the chimney and is wasted, leaving the room to be warmed principally, if not entirely, by the radiated heat. Besides this, it must be remembered that, ordinarily speaking, no provision is made by architects or builders for the proper supply of air to the fire-places, and hence arise smoky chimneys, and other evils of the present system. Here, then, is room for much improvement, and we are glad to perceive that the Society of Arts is giving its attention seriously to the matter, and it is to be hoped that some beneficial effects may be the result. As an evidence of how improved efficiency may be combined with economy in this respect, we may refer to Captain Douglas Galton's fire-grate, on which a paper was read before the British Association at Norwich, in 1868. This consists in putting a flue to the upper part of the fire-grate, which flue passes through a brick chamber formed in the ordinary chimney; this chamber being supplied with air from the exterior of the room by a proper channel, and then the air, after being heated in contact with the flue in the chamber, escapes into the room by openings near the ceiling, so that the room is supplied with a copious volume of warm fresh air, thus doing away with all tendency to draughts from the doors and windows, and furnishing an ample supply for the purposes of ventilation and combustion."

PARA GAS COMPANY, LIMITED.

The Ordinary General Meeting of the Shareholders of this Company was held at the London Tavern, on Saturday, the 29th of December—A. CLAY, Esq., in the chair.

The SECRETARY (Mr. Borradaile) having read the notice convening the meeting, the following report and statement of accounts were presented:—

The directors regret that they are unable to present a favourable report of the working of the company during the past year, and that they cannot recommend the payment of any dividend beyond the interim dividend, which, in accordance with the powers vested in them, they declared in July last.

The causes which have operated so unfavourably on the company are—1. The greatly increased cost of and freight on coal. 2. The discovery in March last of a deficiency in the stock of coal. 3. The loss of revenue on the gas-fitting account in place of a profit as in former years, together with decreased receipts for illuminations, and on sale of coke.

After paying the interim dividend, these charges and losses—all occurring at the same time—have absorbed nearly the whole of the profit earned during the year, but your directors would point out that such burdens are not likely to recur to the same extent, and that the income received from private consumers, on which source of profit the prosperity of the company must chiefly depend, shows a very considerable increase over that of former years.

Under the powers conferred on them by the Articles of Association, your directors have issued debentures to the extent of £10,000, bearing interest at the rate of 10 per centum per annum, repayable in ten years, and redeemable at par at any time after two years at the option of the directors, on giving twelve calendar months notice.

These debentures were offered to the proprietors, as far as possible, in proportion to the number of the shares held by them.

The directors were compelled to take this step by the fact that the remaining unissued shares, for which the proprietors had been invited to subscribe, were not taken up by them in sufficient numbers to provide the requisite working capital, and it was found impracticable to offer the debentures on the terms decided on at a lower rate of interest.

Mr. Alexander F. Wilson having resigned his position as consulting engineer, Mr. Charles Gandon has been appointed sole manager.

The manager, Mr. Charles Gandon, reports that the works continue to be maintained in a state of perfect efficiency.

One of their number, Henry Whiting, Esq., having retired from his seat at the board, the directors, acting under the powers conferred upon them, elected Henry Palfrey Stephenson, Esq., to fill the vacant seat at the board for the time yet unexpired for which Henry Whiting, Esq., was elected.

Your directors regret to have to report the death of Henry Sterry, Esq., a member of your board, which occurred in February last.

In pursuance of the powers vested in them by the Articles af Association, your directors have conferred the vacant seat at the board on Erasmus Wilson, Esq., F.R.S. and F.R.C.S., for the unexpired portion of the term for which the late Henry Sterry, Esq., was elected to that office.

In view of the adverse circumstances above alluded to, the directors have decided not to accept any remuneration until the position of the company has improved.

Two of your directors—viz., Captain J. Walrond Clarke and Erasmus Wilson, Esq., F.R.S. and F.R.C.S.—retire by rotation, but are eligible for re-election, and offer themselves accordingly.

Mr. Ernest Oswald Coe and Mr. Joseph Quick, jun., the auditors of the company, retire from office, but are eligible for re-election, and offer themselves accordingly.

Dr. *General Balance-Sheet, Sept.* 30, 1873. *Cr.*

Authorized capital. £175,000				Works, including extensions, furniture, &c.		£140,629	2 4
Less not called up.	8,130			Gas-fitting capital		18,799	13 9
	£166,870	0	0	Lighter capital		1,732	14 11
Debenture account	11,132	10	0	Stock account (stores)		1,391	3 9
Gas-fitting reserve account	1,097	17	4	Coals		5,011	11 3
Fire insurance-fund	398	3	8	Public lights and residual products		7,534	11 10
Liabilities under bills payable	2,092	16	0	Suspense account		140	0 0
Ditto to sundry creditors	542	3	11	Sundry debtors		339	15 2
				Mana and Co.	£785 0 3		
				Glyn and Co	2028 4 11		
				Pará petty cash	73 14 11		
				Secretary — London petty cash	10 12 5	2,397	12 6
				Bills of exchange, in hand		4,074	5 2
				Profit and loss		483	0 3
	£183,033	10	11			£183,033	10 11

Dr. *Revenue Account for the Year ending Sept.* 30, 1873. *Cr.*

Wages, including lamplighting, purification, and carbonizing	£4,638	3	8	Public lamps		£11,468	13 1
Coals & wood for carbonizing	11,265	0	0	Private lamps		8,955	7 1
Coal deficiency	1,392	4	11	Meter, &c., rentals		925	13 8
Directors attendances	800	0	0	Public establishments		657	16 10
Salaries to officers	2,323	5	11	Illuminations		176	18 11
Retorts	302	13	10	Tar		311	10 1
Rent and taxes	130	0	9	Coke		2,867	17 10
Office expenses, stationery, printing, &c.	229	13	10	Lighter revenue		406	16 0
Repairs	820	9	9	Transfer account		1	12 6
Interest and discount	273	7	9				
Debenture interest	180	0	0				
Apprentices	360	19	2				
Law charges	165	0	0				
Sundry charges	613	9	2				
Travelling expenses	234	11	8				
Loss on exchange	134	19	6				
Loss on gas-fitting (revenue and expenditure account)	128	11	11				
Profit and loss	1,779	14	2				
	£25,772	6	0			£25,772	6 0

Dr. *Profit and Loss Account.* *Cr.*

Interim dividend, declared July 31, 1873	£2,400	3	0	Balance brought forward	£5,937 5 3		
				Less amount of dividend declared Dec. 30, 1872	5,739 16 8	£197	8 7
				Revenue		1,779	14 2
				Balance		483	0 3
	£2,400	3	0			£2,400	3 0

The CHAIRMAN proceeded to make a few explanatory remarks on the report, stating that the great decrease in profits realized during the year had been caused by extraordinary and unforeseen circumstances, which he hoped would not recur to the same extent in the present or future years; and that, although they could not at this time offer the shareholders any dividend, he hoped that another year would see the company—at all events to a considerable extent—re-established in its former comparatively prosperous condition.

After some further remarks explanatory of the appointment of Mr. Charles Gandon as sole manager, and of the high expectation which, deduced from his success while manager of the Bombay Gas Company, the board had formed and continued to hope from his management, the chairman concluded by moving the adoption of the report.

A director seconded the motion.

Dr. BRICKWELL said he feared some of the statements made by the chairman would not hold water. He had not had sufficient time to look into the various differences shown in revenue and expenditure as compared with former years; but he felt that some radical mismanagement must have occurred. Although not a large shareholder, he had watched the company almost from its commencement, and had been encouraged to increase his holding by what he thought the very judicious manner in which affairs had been conducted hitherto; but he considered the present report so manifestly unsatisfactory, that, especially when taken in connexion with recent changes in the staff of the company, he could not but feel that there was some hidden cause for this state of matters which was being kept from the proprietors, and he therefore begged to move as an amendment—"That the meeting be adjourned for one calendar month," in order to give time to look into the accounts, which he observed had, although acknowledged to be incorrect in the first instance, and corrected by a subsequent re-issue, been signed and vouched as correct by the auditors in both instances.

Mr. H. P. STEPHENSON said that, as a director, he had much pleasure in seconding the amendment, as the board had every wish to facilitate inquiry.

Mr. COE, speaking for himself and brother auditor, explained how the first issued report and balance-sheet, although subsequently found to be incorrect, had come to be vouched for as correct by himself and Mr. J. Quick, jun., his co-auditor.

Mr. WILSON said that, as the manager who, until the 31st of December, 1872, had almost from the beginning of the company, conducted their affairs in Para, he was responsible for three months' working of the financial year of which the report treated; and he wished to state that during these three months nothing unusual had occurred, which could have in any way affected the proportionate amount of profits earned as compared with former years, and that as this proportion for the three months was greater than the total shown by the balance for the year, the remaining nine months must have been worked at a loss. Regarding the causes, adduced by the board, as leading to this result, he did not think they were at all sufficient. Some of them, made to appear as important, were really of little moment (he referred to illuminations and gas-fitting accounts), and he thought they had been fully compensated by the great increase shown in private consumption. He concluded by disclaiming all responsibility in the matter, and offered, were a committee of investigation appointed, to give evidence fairly as to what, in his opinion, the real causes were.

Mr. HENRY thought such a committee ought to be named. As a broker he had recommended the stock to his clients, and felt a certain responsibility resting upon him in the sudden and extraordinary decline shown. He had heard many rumours regarding a probable unsatisfactory statement of affairs, as far back as June last, when Mr. Rumball had retired; and he felt that the prognostications of that gentleman, embodied in a letter addressed to the chairman, were being fully confirmed. He and many of his friends had become interested in the company, through their connexion with that gentleman, and gave considerable weight, especially in this instance, to his opinion, and he hoped, for the satisfaction of all, that a committee would be nominated.

Mr. RUMBALL rose to explain the reason of his retirement from the company. He had been their engineer, and one of the originators, and for 12 years had, as he thought, enjoyed the confidence of the board. Suddenly he found his advice ignored, and a gentleman (Mr. H. P. Stephenson) appointed to a seat at the board against his express protest, because, being already director of about 16 companies, Mr. Stephenson could not give the attention to his duties as a director which was needful; besides, as Mr. Stephenson was a director of the Patent Gas Company, and one of the other directors was on the board of the New Gas Company, he feared Para might be made the field for experiments which he could not sanction.

Mr. STEPHENSON made a few remarks in defence of his position, and indignantly protested against the attack made on him by Mr. Rumball.

Mr. LAMBERT said he thought matters called strongly for inquiry.

Mr. HOLT (chairman of the Great Southern of Buenos Ayres Railway Company) said that, like Dr. Brickwell, although not a large shareholder, he had watched this company almost from the beginning, and had been struck with the steady progress made, and on the whole very satisfactory accounts shown, from what was certainly, compared with many other places, a limited and not at all promising field. He had listened to the very sensible remarks made by Mr. Wilson, their former manager, who, he understood, along with the engineer, Mr. Rumball, had become entirely separated from the company. It seemed to him that the decline in their affairs was co-incident either with the actual retirement of these gentlemen, or with causes which had led to that retirement, and he ventured to ask the board why Mr. Wilson had been allowed to retire. Could a seat as a director not have been found for him when so many vacancies were occurring? Did any one in the meeting, he asked, seriously imagine that, had the even tenor of Mr. Wilson's management been left undisturbed, had he remained, as formerly, in the management, the present state of affairs would have come about? (Loud cries of "No, no; certainly not.") That being the case, he thought Mr. Wilson's experience should not have been lost to the company, and that a seat should be offered to him at the board, either as managing or as an ordinary director.

The CHAIRMAN stated that they had no hand in Mr. Wilson's retirement. Mr. Wilson had left them; they had not dismissed him. The board courted inquiry, and he appealed to several gentlemen present to act on the proposed committee, which, after some delay, was formed by the acceptance of Dr. Brickwell, Mr. Thomas Lambert, and Mr. J. W. Whitfield, and the meeting was adjourned for three calendar months instead of one.

The usual vote of thanks was tendered to the directors.

BURSTING OF A RESERVOIR.—On Thursday evening, Jan. 1, there was an extraordinary fall of rain in the neighbourhood of Festiniog. On the Dolwyddelen side of the Rhiwybryfdir quarries there were some large lakes or reservoirs artificially formed for the use of the machinery used at the quarries. In one of these, an immense reservoir, the water burst through the dam, carrying destruction in its wake. In the course of the flood at Talywaenydd, there were some cottages which were flooded, and in one of which two children were drowned in their sleep. The inmates of some of the others escaped through the roofs. At this place a cow was drowned. There were about thirty men working that night in a mine, which was afterwards flooded; but owing to the presence of mind of a young man, who ran there in time to warn them of what had occurred, they were able to reach a place of safety. In a few seconds the mine was flooded.—*Oswestry Advertiser.*

GAS-PIPES *v.* GUNS.—At one of the large pipe-works in Louisville, gas and water pipes are being made from old ordnance. The guns, ranging from 3000 to 8000 lbs. in weight, were purchased during the past summer at a Government sale held at Mound City. They were cast during various years—the most of them bearing date of the time of the war of 1847–8. Others are of more recent date; very few, if any, have ever been used, and seem as perfect and in as good order as the day they were made. The process of their conversion is simple. The guns are first placed in a large lathe and cut into four or five pieces, or sections; each piece or lug, will vary from 600 to 1600 lbs. The pieces are rolled from the floor into the mouths of the cupolas. With the cannon is mixed large quantities of charcoal and pig iron, from Tennessee and Alabama, the cannon forming about one-third of the mixture. The melted iron is now tapped, drawn from the cupolas, and run into large ladles, varying from two to four tons each. The ladles, by means of a network of railroad tracks, are drawn to the different moulding pits, and here the hot iron is run into the various perpendicular pipe moulds.—*Iron.*

BILSTON GAS COMPANY.

The Annual Meeting of Shareholders was held on the 5th inst.—Mr. W. HATTON in the chair.

The notice convening the meeting having been read, the following report was presented :—

The trade account for the year exhibits a net profit of £2474 18s. 1d., which with £644 4s. 11d. brought from last year's accounts, will make a total of £3119 3s., at their disposal. This amount the directors propose to appropriate as follows :—

Half year's dividend of 4s. per share, paid Aug. 1, 1873.	£1200	0	0
Half year's dividend of 4s. per share, payable Feb. 1, 1874 . . .	1200	0	0
Balance carried forward to next year's account	719	3	0
	£3119	3	0

The favourable contracts for coal referred to in last year's report having expired, your directors found it necessary to again advance the price of gas 3d., making, with the advance in 1872, a total rise of 6d. per 1000 cubic feet. This sum is quite insufficient to meet the additional cost of coal, &c., still it is the hope of the directors that further advance will be unnecessary. In order to give an adequate supply of gas to the whole of their district, your directors find it necessary to provide means for additional storeage, and they have resolved to erect an additional gasholder of large dimensions. For this purpose, however, the land adjacent to the works at Moxley is quite unsuitable, and your directors have been compelled to seek a suitable site elsewhere. They have entered into a contract for the purchase of land at Ettingshall, which is of sufficient area to permit the removal to it of the whole of the company's works should it be deemed expedient to do so. It also possesses the special advantages of proximity to canal and railway, the absence of which, in relation to the existing works, has long been recognized by your derectors as a source of inconvenience and diminished profits. These circumstances have led your directors to consider the propriety of ultimately removing the present works to the new site. This work, if undertaken, will be gradual, and probably extended over four or five years. But in order to accomplish it it will be necessary to increase the capital of the company by the issue of 1000 additional shares, which, in accordance with the Act of Parliament, the company have power to create. If, after mature consideration, the directors decide to adopt this course, they will convene a meeting of the shareholders to sanction this proposal. The capital, works, and reserve-fund accounts, are rendered herewith. During the past year, a seat at your board has become vacant by the death of Mr. John Bullock. It will be the duty of the shareholders to elect his successor. The directors who retire by rotation are Messrs. J. F. Field and T. Holcroft, who offer themselves for re-election. The auditors, Messrs. S. Wilkins and T. H. Hickman, also retire, and are eligible for re-election.

The CHAIRMAN, in moving the adoption of the report, congratulated the shareholders on the satisfactory character of that document. Taking into account the high price of coal and labour, the principal items required in the manufacture of gas, he thought the report would be regarded as highly satisfactory. The directors would have been glad if they had been enabled to continue their operations without increasing the price of gas, but they found that to be impossible. The price of coal was 100 per cent. more than in 1870. In that year they paid 9s. 3d. per ton for coal which now cost them 18s. 3d. The small increase they had made in the price of gas would bear no comparison with the increased price of coal. During the year they had been compelled to make a further addition of 3d. per 1000 feet, and they did so under the impression that their good contracts would carry them through until coal was lower. There had been no material reduction, and they had yet to determine whether in the coming year it would be possible for them to continue to supply gas at the present rate. If the price of coal did not decrease, they would be unable to do so. In many other places the price of gas had been advanced, and they would probably be compelled, unless circumstances changed, to put on an extra 3d. per 1000. With regard to the suggestion embodied in the report to the effect that the present gas-works should be removed to Ettingshall, he might intimate that the adoption of the report would not necessarily involve its acceptance. It would be discussed at the extraordinary meeting that would follow. He might state that the erection of additional gasholders was an absolute necessity. After reminding the meeting that no sum would be vested in the reserve-fund, excepting the additional interest that had accumulated, the chairman concluded by stating that they proposed to pay the usual dividend, and carry forward the remaining balance to next year's account.

Mr. WOOD seconded the motion.

Mr. CREMONINI said that although the chairman had spoken of the report as satisfactory, he was rather disappointed. The last two years had been years of prosperity, and he could not help thinking that the shareholders ought to be paid an extra 2s. Three or four years back an additional outlay was found necessary, and the shareholders submitted to a reduction of their dividend. Last year, however, they were enabled to carry forward £650, and a promise was made that the arrears of dividend consequent upon the extra outlay, to which he had alluded, should be returned at the earliest opportunity. At a time of prosperity like the present, such a promise should be kept. With reference to the increase in the price of gas, he submitted that, with coal 100 per cent. dearer, the consumers could not and had no reason to grumble, because the company sought a fair remuneration for their outlay. He confessed, so far as the extension was concerned, that he was astounded when he read the report. However the directors could have thought of proposing an outlay of from £15,000 to £16,000, in addition to what they had already spent, he was at a loss to comprehend. The prospects for the future held out no hope of a return. Bilston was a town where the demand could not increase to a large extent. He would, of course, consent to provisions being made for the erection of a gasometer, but he should resist the proposal for removing the works. There was no hope of the town increasing, and he believed they would be affected by the operations of the new Mines Drainage Act. He moved that an extra dividend of 2s. be paid out of the surplus.

The CHAIRMAN said Mr. Cremonini's proposition should be brought forward after the report had been adopted.

The motion for the adoption of the report having been carried unanimously,

Mr. HOLCROFT moved that, in addition to the dividend of 4s. per share paid on the 1st of August, a further dividend of 4s. per share be declared payable on the 1st of February next.

Mr. HALL seconded.

Mr. CREMONINI moved that the extra 2s. should be given.

Mr. E. HICKMAN seconded the amendment.

The CHAIRMAN then pointed out that no shareholder could propose a dividend greater than that suggested by the directors. The meeting had power to reduce it.

Mr. CREMONINI replied that the directors were about to reserve the little surplus which the shareholders should have had two or three years ago. But the deed of association did not empower them to keep more than £2000 in reserve. Now that the directors were in a position to pay it they ought to do so.

The CHAIRMAN said the directors were supposed to be the best judges of the position of affairs. It was their wish to pay up the arrears of dividend; but they were of opinion that they ought not to do so at present. In 1868 the dividend was reduced from 8s. to 6s. At the first opportunity, in 1870, t was restored to 8s., and it was their wish to pay up the arrears as soon as possible. But it could not be done at present, and the directors believed they were taking the best means to secure a permanent advance in their profits.

After some further discussion on this point,

Mr. CREMONINI raised the question of the qualifications for directors. He argued that the greater number of shares a man held the more interest he must be supposed to take in the undertaking.

The CHAIRMAN pointed out that it was impossible, at such a meeting, to make any alteration in the matter.

In the course of a discussion, Mr. SMITH remarked that it did not necessarily follow that the man with the most shares possessed the greater amount of sense.

Ultimately the motion for a half-yearly dividend of 4s. was carried, and Messrs. S. J. T. Field and T. Holcroft were re-elected directors. For the third vacant place Messrs. E. Hickman, Farmer, and Cremonini were nominated, and, as the result of a vote by ballot, the first-named gentleman was elected. Messrs. T. H. Hickman and Mr. E. Ellis were elected auditors.

A vote of thanks to the directors and officers closed the ordinary annual meeting.

An extraordinary general meeting of the shareholders followed, "for the purpose of considering and approving or otherwise a proposal of the directors to extend, and, if requisite, to remove the existing gas-works, and to increase the capital of the company by the issue of 1000 new shares at £5 per share."

The CHAIRMAN said that he hoped that the question upon which the extraordinary meeting was convened would receive impartial consideration. It must be remembered that, while the Act of Parliament conferred a monopoly by giving the company special privileges, it also imposed special duties. The sole care of the directors was to carry out the objects of that Act in all directions. In tracing the history of the company since its formation in 1846, the chairman alluded to the following facts as forming a complete answer to Mr. Cremonini's assertion that there was no scope for business. At the close of the first year, in 1847, they had 225 consumers, and the quantity of gas used by meter was about 4 million cubic feet. In 1863, a period of sixteen years, the number of consumers had increased to 1545, and the consumption of gas by meter to 25 millions of cubic feet. In 1873 the consumers had increased to 1777, and the consumption by meter to 42 millions of feet. With such an immense increase it was not to be wondered at that the works, which were built by persons who never anticipated such an amount of success, should have proved inadequate. They had made many improvements and extensions, but the supply was not equal to the demand. He pointed out that the site of the present works, though well chosen 27 years ago, when it was surrounded with collieries, was now so far removed from the railway and the canal that a large amount of money was spent every year for team purposes. Many operations had been carried on so near them that they had frequently to spend money to protect themselves, and the foundations of the buildings were injured from a seam of coal a few feet below the surface having caught fire by the retorts. Under all the circumstances the desirability, if not the necessity, for removing the works became so evident that the directors had entered into a contract to purchase ten acres of land at Ettingshall, where they would have the advantage of easy communication both by the railway and the canal. They proposed, in the first place, to erect a new gasometer (capable of holding 350,000 feet of gas) and a retort-house. In the following year the mains would be re-arranged, and the remainder of the works would be removed from year to year. The cost would be about £14,000 or £15,000. In the first year they would spend £8000; in the second, £2000; and about £1000 in each of the four following years. He then read resolutions to the effect that the meeting would sanction the proposal of the directors for the erection of a gasometer and other plant on the land they had purchased at Ettingshall, with a view to the removal to that site of the whole of the works, if and when the directors might think such removal expedient; that, in pursuance of the power given them by the Act, they increase the capital to £35,000, by issuing 1000 shares of £5 each; and that, in the event of the paid-up capital being insufficient, the directors shall raise a loan not exceeding £5000. He moved the adoption of the first of these resolutions.

Mr. HOLCROFT seconded the motion. If the shareholders wanted 10 per cent. for their money, he believed the only way of getting it was by the adoption of the plan proposed. They were at the present time subjected to much loss on account of the improper distribution of the gas, and other defects.

Mr. CREMONINI objected to the proposal. The directors had no power, by the deed of association, to make a loan, and if anything of the kind were done, the utmost caution should be exercised. He suggested that, before any alteration was taken in hand, a committee of shareholders should be appointed to assist the directors in seriously considering the matter. If the capital was raised to the extent proposed the company would be ruined.

A long discussion followed.

The CHAIRMAN said the directors were acting as they felt assured was best in the interests of the company, and if the shareholders had not confidence in them they were quite prepared to resign.

Mr. KEARNE and others complained of the bad supply of gas in Bilston, and said the inhabitants of Ettingshall and Sedgley were always complaining.

Mr. PRATT thereupon suggested that the trade with the two places should be cut off.

Mr. HOLCROFT explained that, owing to the improper arrangement of the mains, they had to put an immense pressure to drive the gas to Ettingshall; and that the mischief could be altered by re-arrangement.

Mr. CREMONINI repeatedly protested against the policy of the directors. In regard to Bilston, he said nothing was staring them in the face but desolation. He eventually moved an amendment to the effect that the directors be empowered to construct a gasometer on the new land, but that they should wait before entertaining the idea of removing the works.

Only three hands were held up in support of this amendment, and the original motion was ultimately carried. The remaining resolutions respecting the power to increase the capital and to borrow money were also carried.

A vote of thanks to the chairman concluded the proceedings.

VALUATION OF THE WORKS OF THE CAMBRIDGE GAS COMPANY.—At the meeting of the Cambridge Assessment Committee, on the 5th inst., an appeal by the gas company against their assessment came on for further consideration. The clerk reported that he had received a communication from the company, stating that they were willing that their rateable property in the Cambridge Union should be valued for the purpose of assessment by either of the three following gentlemen, viz.—Mr. John Ayris, of Norwich; Mr. Edward Ryde, of 17, Parliament Street, Westminster; or Mr. Charles Stevenson, of 4, Parliament Street, Westminster. And further, that the company were willing to abide by the valuation of either of those gentlemen, who were all of them entirely unknown to the directors or officers of the company, except by their public reputation; and to pay one half of the fee for such valuation. The communication suggested further, that in order that the valuer's mode of valuation might receive no bias from either side, the only instructions given him should be a copy of a resolution of the Assessment Committee of the 15th of December, a copy of the secretary's letter, and copies of the company's accounts for the two past half years. The committee, after some discussion, resolved to inform the company that if they were willing to refer the question to arbitration, the committee suggested that the Local Government Board should be applied to, to nominate some competent and impartial valuer for the purpose, who, upon his appointment by the committee, should receive such information from the company's officials and inspection of the company's accounts as he might deem requisite, in order to arrive at a fair and just estimate of the annual value of the company's rateable property in the Cambridge Union; the expense attending such valuation, and incident thereto, being paid in equal moieties by the company and the committee.

LONDONDERRY GAS SUPPLY.

A Special Meeting of the Town Council of Londonderry was held on the 1st inst.—the MAYOR (Alderman Darcus) in the chair.

The CLERK read a letter from the gas company, which stated that in consequence of the continuous advance in price of all materials used in the manufacture of gas, it would be necessary to charge the corporation an additional 10s. per lamp to that at present charged on all public lamps from and after 1st February next. The company stated that they were most anxious to avoid making any alteration on present charges, and that in the hope of the price of coal, &c., falling, and obviating the necessity of any advance, they delayed making the announcement above given until now. They further expressed a hope that this increase might, after all, be but a temporary one, and added that as soon as circumstances would permit, they would be glad to reduce the rate.

Mr. THOMPSON moved—"That, considering the price at which gas can be produced, and from the prices charged in other places, we consider the present prices charged by the Londonderry Gaslight Company should be sufficiently remunerative, and that a further advance to private consumers to 6s. 8d. per 1000 cubic feet and to £4 5s. for the public lamps is not warranted at present, and is unfair to the public." He said the public had been taken by surprise at the announcement made on behalf of the gas company that the price of gas to private consumers would be advanced 10d. per 1000 feet, and 10s. per annum for each of the public lamps. The feeling amongst consumers was rather strong on this subject, and, therefore, he thought it was the duty of the council to take the matter up, and, if possible, devise some means to protect the citizens from what he considered an overcharge, to a great extent, in the price of gas. In proposing to deal with that question, he admitted that they had considerable difficulties to contend against, inasmuch as the gas company had a monopoly, and could regulate the price at whatever they thought right to charge. Public companies had their duties as well as their rights, and it was the duty of the gas company to give the public a supply of gas—which was to a great extent an indispensable luxury—at a moderate price, and be content with moderate profits. As to the profits of the gas company, they had been told by the gas proprietors that they are very moderate indeed; but when the fact was remembered that the original shares were only £10 each, and that they now sold at £40, few would be disposed to deny that the gas concern was a money-making establishment. To increase their works some years ago, the gas company found it necessary to raise more capital, and accordingly they issued a number of new shares at £28 each, which was equal to a bonus of £18 on each of the original shares. This was a considerable advantage to the original purchasers, and at the present moment the shares were value for £40, a still further bonus of £12 per share. The price now proposed to be charged to private consumers was 6s. 8d. per 1000 cubic feet, and for the public lamps £4 5s each. As to the cost of producing gas, it could be shown by indisputable authority that gas might be produced, even with coals at the present prices, for 2s. 9d. or 3s. per 1000 cubic feet, which was borne out by the fact that other towns supplied gas at moderate prices, and paid good dividends after all. He held in his hand a book which contained a report of the Dublin Gas Company, in which it was stated that one ton of coals, properly carbonized, would produce 10,000 cubic feet of 20-candle gas. If that were the case, the gas company must have had a very large profit out of their business. He had been told that it was fallacious to suppose that so large a quantity of gas could be made from a ton of coal; but here were the facts. In Belfast the price was 4s. 6d. per 1000 cubic feet, with a discount of from 2½ to 20 per cent. In Dublin it was 5s. 1d. per 1000, in Liverpool 3s. 9d., and the company there had been most successful, and were paying 10 per cent. to their shareholders. In London it was 3s. 9d., and in Glasgow 4s. 7d. Seeing this, it seemed to him very hard that in Londonderry they should have to pay 6s. 8d. per 1000 feet. They were told by Mr. Macnie, the gas manager, that this increase might be but a temporary one, and as soon as coals came down the company would be glad to reduce it. Now, it was scarcely a year since 10d. per 1000 was added to the price per 1000 to private consumers, and the public lamps, which had been £3 each, were raised to £3 15s. Now they were to be charged £4 5s. Coal was then advancing in price, and perhaps the increase was necessary, but now that coal was getting cheaper it was strange that the company should seek to raise the price. The answer of the company was, "We had good contracts made at the time of the former increase, and we gave the town the benefit of that." What could be done to meet this company, which had a complete monopoly? One way would be to use oil lamps. Good paraffin oil at 14d. per gallon would be equal to 1000 cubic feet of gas. As to the public lamps, he questioned if they could not light the streets with paraffin oil. That would be one way to meet the company. Another way was by starting a new company. Owing to the strong feeling at present existing in Derry, he believed it was practicable, and that it would not entail as much difficulty as some people imagined. In other towns it had been done, and why could they not do it in Derry? But the present company said, "Buy up our shares; we are quite willing to sell." He thought, however, that a little opposition would be better, and would have a beneficial effect. They had the right to investigate this matter for, under clause 35 of the Gas Works Clauses Act, 1847, it provided, "That, on the petition of any two gas ratepayers, a court of quarter sessions may nominate and appoint an accountant, at the expense of the company, to examine and ascertain the actual state and condition of the concerns of the company; and, if it shall appear to the court that the profits of the company for the preceding year have exceeded the prescribed dividend—viz., 10 per cent.—and that there exists an invested reserve-fund equal to one-tenth of the nominal capital, then the company shall make such rateable reduction on the rate for gas as, in the judgment of the court, shall be proper." No doubt they would be told that this company had not been paid 10 per cent. But he considered, when the bonuses were added to their original shares, that they had been paid more than 10 per cent., and the public had not got a corresponding reduction in price.

Mr. HAMILTON seconded the motion, and expressed a hope that the gas company would reconsider their decision. There were various reasons why they should not increase the price of gas, and amongst these was the fact that they were getting a higher price for all their residual products.

Mr. CORSCADDEN said Mr. Thompson had told them a great deal about the price of gas being cheaper in Liverpool and in London, but he had not told them what was the price of coals in Glasgow and in Liverpool. The Derry company had to import coals from Glasgow and from Liverpool, and consequently they had to pay 10s. per ton for freight. Even Belfast could get coals 2s. or 3s. per ton cheaper than they could be got in Derry; and in Belfast they consumed at least three times as much gas as was consumed in Derry, which enabled the corporation to give the gas cheaper. He was sure the Derry Gas Company had no wish to charge more than what was right for gas, and what would remunerate them for their outlay. They had no objection at all to the corporation going into the matter. At the last meeting of the gas company which he attended, it was stated that if it had not been for the contracts they had made for coals last year, which they gave the town the advantage of, they could not have made gas at the price they did. If the corporation wished to get up another company, of course they could do so. That could not be objected to by any one. Who got up the present gas company? It was the late Bishop Knox who got it up; for the Derry people were not then in a position to light the town with gas. Bishop Knox took a large number of shares in it, which fell to his son afterwards, and proved very valuable to him. They were told that these shares had advanced enormously—from £18 to £28. Would Mr. Thompson turn and look at the shares of the Belfast Bank, or any other bank in town, which were issued at £25, and although they had increased to a great extent, go down to one of those banks and see if they would make the discount one penny less? Considering the price many of the gas proprietors had paid for their shares, they were not now getting more than 6 per cent. for their money, and that was a small remuneration for the outlay. He did not know that coals were anything cheaper than they had been, though he had heard Mr. Hamilton expressing himself to the effect that coals were cheaper now than they were two months ago. Let those who desired an investigation of the company's affairs come forward, and he, as one of the shareholders, would give them every facility. If it could be shown that the company were making too large profits on it, they would reduce the price of gas, or not put on the increase. People ought to be aware of the price of coals before they made such charges.

Alderman M'CARTER said, as chairman of the gas company, it might be expected that he should offer some explanation respecting the determination of the company to make the advance in price, and the causes which led to it. They did not arise from either neglect or mismanagement, but from causes over which the company had no control. The works of the Derry Gaslight Company would compare favourably with any in the kingdom—and this he stated upon high engineering authority—and the gas produced equalled that of any other company. Every improvement had been adopted in order to produce pure gas, which the company had invariably sold at a fair and reasonable price—always reducing the price as material used became cheaper, and now, most reluctantly, advancing it, in justice to the shareholders, as coals, iron, lime, and other requisites had advanced in price. The public lights had always been lighted at nominal profits, and for ten years, ending July 1 last, the annual dividends did not exceed 6 per cent. on the paid-up capital. This, considering the heavy risk incurred by the company, who were their own insurers for the greater portion of their property, could not be thought a large profit. One per cent. was generally allowed for such risk, and 1 per cent. for depreciation of property. The company being purely commercial in character, were surely entitled to receive a fair return upon their investment, and most of the shareholders considered 6 per cent. less than they ought to have. He regretted to add that this was the only joint-stock company formed in Derry which had held its ground; and few, he trusted, would wish it the fate of the several railway and steamboat companies, which entailed such serious losses upon many of the inhabitants. No doubt there might be some who would, on their own account, or for popularity, be very magnanimous with the property of others, but he trusted there were none such present. Let them deal with the question in a fair and commercial spirit, and should the figures which he would give prove incorrect, and should Mr. Thompson prove that gas could be made in Derry at 3s. per 1000 cubic feet, he would not only be worthy of the thanks of the Londonderry Gaslight Company and all other gas companies, but of the public, who would then be entitled to a much greater reduction than was now sought to be obtained. At the present cost of materials Derry gas stood at about 5s. 1d. per 1000 cubic feet, allowing nothing for interest upon capital, as would appear in the statement he proposed to submit. It was most unfair to compare London, Birmingham, Manchester, or even Belfast, with Londonderry, in which places gas of the lower standard of 12 to 14 candles was used, while here the illuminating power registered 18 candles, and was passed through registered governors placed upon the public lamps. Fourpence per candle, in large consuming towns, was, he found from evidence given by engineers, considered a fair price for gas, and in proportion to the increased consumption prices could be reduced, within the area supplied from the Derry works. These other cities and towns consumed from three to ten times the quantity sold in Derry, so that the capital employed in either was very much less in proportion to the gas sold than that employed there. If the Derry consumption increased, gas would be sold cheaper, and if it lessened, more must necessarily be charged. Comparing Derry with other towns of like extent and importance, it would be found that the lowest prices had ruled, whilst the illuminating power had been greater. Would any one persist in saying that, because of the residual products increasing in value, gas could be made as cheaply with coals at 36s. as when they were 18s. per ton? With every allowance for increase in the value of residuals, such as coke, lime, &c., as would appear in the statement now submitted, gas would cost the company about 2s. per 1000 cubic feet more than it cost in 1870. The shareholders at their last meeting expressed themselves very dissatisfied with the committee for not having advanced the price to 6s. 8d. (at the time it was raised to 5s. 10d.) for the private, and 4s. 9d. for public lights. Edinburgh and Leith paid 6s. per 1000 cubic feet for gas; the Perth Corporation charged 7s. 6d.; Ayr, Kilmarnock, Newcastle-on-Tyne, and many other such towns, situated in the centre of coal districts, had been paying, since coals advanced, from 6s. to 7s. 6d., and as gas coals were still at a high point—higher than had yet been paid by the Derry Company—no good reason could exist for objecting to the advance notified. The Board of Trade had sanctioned a considerable advance at Cork after a severe contest between that company and the corporation, and the price there was greater per candle standard than was intended to be charged here, whilst in Newry and Dundalk 6s. 8d. was the price for inferior gas to that made in Derry. Belfast, too, previous to selling their works to the corporation (who agreed to pay over £120,000 profit for them) gave notice of an advance in price. He now submitted the figures referred to.

Estimate of Profit on Gas Manufacture from Coal and Cannel at Present Rates.

Average price of gas coals at date, 36s. 6d. per ton					£1	16 6
Average cost per ton of coal for wages, salaries, repairs, taxes, bad debts, and general expenses					0	15 6
					2	12 0
Less residual products—						
Coke, about 12 cwt. of which is obtained per ton of coal; but from this quantity about one-half is required for heating retorts, boilers, &c., leaving for sale 6 cwt., at 1s. 6d.	£0	9	0			
Tar and ammoniacal liquor	0	1	4½			
Waste lime	0	0	3½			
					0	10 8
Net cost of 1 ton of coal carbonized					2	1 4
This is in proportion to entire quantity carbonized in the year ended June, 1873.						
Balance is profit per ton of coal, with gas at present price of 5s. 10d.					0	7 1
					2	8 5
Gas produced from 1 ton of coal carbonized	9600 cubic feet.					
Less leakage and waste in distributing	1300 ,,					
Leaving for sale, at 5s. 10d.	8300 ,,			—	2	8 5
Profit (being 7s. 1d. per ton) on 4400 tons carbonized for the year ended June, 1873					1558	6 8
For which deduct 2 per cent. on a capital of £40,000, for depreciation, risk, &c.					800	0 0
Leaving available for dividend (being less than 2 per cent)					£758	6 8

It was in no defiant spirit, therefore, that the committee of the gas company stated that at present prices of coals, iron, lime, and labour, the Londonderry Gas Company could not, without loss, continue to supply gas at 5s. 10d. to private, and 4s. 9d. to public bodies. Should the corporation determine upon having this property in their own hands, he was authorized by the

committee to say that they would advise a transfer of their company's interest at a fair valuation of their works and plant. The committee felt conscious of having acted fairly between the company and the public, and regretted being unable to satisfy either. It was to be borne in mind that the company's capital originally consisted of 600 shares, at £10 per share. There was no dividend the first year, and £1 was called up shortly after. And another point to be remembered was that, as profits accrued to the company, a part of them was always applied to extend the gas-works, and was, consequently, withheld from the shareholders, so as to save further calls. In 1846 there was a call of £2. Matters went on thus until, in 1853, such calls and additions had amounted to £22. Then a fresh issue of shares took place. Much of this pressure originated because of erecting the gas-works at the waterside. In 1860 the several additions had raised the shares to the sum of £25, and at this time another issue occurred. The last issue of shares took place in 1864, and the capital had increased to £27 10s. per share at that time. But with such additions and profits, and all put up together, there was a paid-up capital at the present time of actually £40,000. This was a large sum, but then they must look at the improvements and extensions that had been made.

Alderman M'Correll said after the statement made by the chairman of the gas company, and the statement made by Mr. Thompson, it was imperative upon the council to take some action with regard to this question. He would suggest that a committee be appointed by the council, to meet the Gas Committee, and examine the statements made by the chairman of the Gas Committee and Mr. Thompson, and that the council meet on some future day when the result of the investigation could be brought before them.

Mr. Foster remarked that he thought the council would be disposed to agree with him that the company was not a very fine paying concern after all, and if the price of material should continue to increase for some time as it had done latterly there was some risk of it becoming one of the worst paying concerns in Derry, returning, perhaps, an annual dividend like some of the concerns referred to by Mr. Alderman M'Carter. It occurred to him that far too much had been said about the position occupied by the gas company. There had been several threats about getting up a new company, and about the corporation applying for an Act of Parliament to enable them to buy up the works of the old company. He had no doubt the gas company as such would have no objection to sell their works at a fair valuation, either to a new company or to this corporation. As a shareholder, he had no objection how soon the works might be bought up by the corporation to manage them as best they could. As a member of the corporation, however, he did not know whether he would advise that course being adopted, for he thought the corporation had just as much on hand as they could well work with at present. He need not add any figures to those already supplied by Alderman M'Carter, for they had exhausted the subject. From these figures it was evident that it would be almost impossible for the company to supply the gas at a cheaper rate than that proposed. He had no objection to second the motion made by Alderman M'Corkell that a committee of the corporation be appointed to co-operate with the Gas Committee in investigating the matter. That investigation would enable the council to see more clearly the true position of the gas company, and would throw light on the subject generally.

After some further conversation, it was agreed, by way of amendment to the motion made by Mr. Thompson, that a special committee, consisting of the mayor and other members of the council, should be appointed to meet the committee of the gas company, and confer with them as to the prices to be charged for public and private lights, and report the result to the council.

Crystal Palace District Gas-Works.—On Christmas Eve the usual distribution of beef and mutton to the *employés* took place at the works of the Crystal Palace District Gas Company, under the presidency of Mr. James Watson, the esteemed manager. Upwards of 200 prime joints, varying in weight from 10 to 15 lbs., were arrayed in one of the buildings. Mr. Watson having addressed a few sensible remarks to the men, the distribution was made amid many expressions of gratitude to those who thus manifested a continual interest in their welfare.—*Sydenham Times.*

Testimonial to Mr. Daniel Helps, of Bath.—On Thursday, the 1st inst., a complimentary dinner was given by the lamplighters in the employ of the Bath Gas Company to Mr. Daniel Helps, for the purpose of presenting that gentleman with a testimonial, consisting of a handsome clock and an address. Mr. D. Helps is the chief inspector and storekeeper of the gas company, and the testimonial was subscribed for by the whole of the lamplighters. Dinner was laid for about 30 guests, the chair being occupied by Mr. J. Slip, and Mr. J. Hooper ably fulfilling the duties of vice-chairman. Mr. Hopkins, in a few appropriate sentences, presented the clock, which bore a plate containing the following inscription:—"Presented by the lamplighters of the Bath Gas Company to Mr. D. Helps, chief inspector, as a token of respect. Jan. 1, 1874." Mr. Helps expressed his pleasure at receiving this proof of respect and kindness, and his great interest in the welfare of the *employés* of the company. He concluded by hoping that they would use their best endeavours, as they usually did, to attend to their work, and not give any cause for complaint. After complimentary speeches from the chairman, vice-chairman, and others, and others, mirth and harmony occupied the attention of those present for the remainder of the evening.

Proposed Extension of the Birmingham Gas Company's Works at Nechells.—At the meeting of the Birmingham Town Council on Tuesday last, a deputation attended to present a memorial against the proposed extension of the Birmingham Gas Company's works at Nechells. The Rev. H. C. Milward, vicar of St. Clement's, read the memorial, in which the memorialists stated that they believed the proposed extension of the gas-works for the manufacture and storeage of gas and its residual products to lands in the wards of Duddeston and Nechells would be in the highest degree prejudicial to their health and injurious to their property. Belonging, as they did for the most part, to the working classes, the memorialists were unable to oppose the Gas Company's bill in Parliament for themselves, and they therefore earnestly hoped that the Town Council would undertake to do so for them. The memorialists entertained this hope with the greater confidence, inasmuch as the lands in question were situated altogether within the borough, and they thought that the works, involving the production of offensive and dangerous chemical emanations, ought to be carried entirely away from thickly-populated districts like the Duddeston and Nechells wards. The memorial was signed by nearly 800 persons. The rev. gentleman pointed out that there was a strong feeling in the neighbourhood that the erection of works covering an area of 40 acres would be nothing short of a public nuisance, and dangerous to health. The value of property in Nechells was also rising, very much from what the corporation had done with reference to the sewage, for whilst the inhabitants formerly suffered from an unbearable nuisance from the Saltley works, since the present operations there had been carried on they had experienced no nuisance at all. It was therefore felt that the proposed works would be injurious to property. If the works were carried half a mile farther down they would not be in a thickly-populated neighbourhood, and the memorialists laid great stress on the fact that every yard of land which was proposed to be occupied by the gas-works was in the borough. They, therefore, earnestly hoped that the prayer of the memorial would meet with the approval of the council. Dr. Hickinbotham also urged that there could be very little doubt that gas-works were prejudicial to health. On the motion of the Mayor, seconded by Alderman Biggs, the memorial was referred to the Public Works Committee for consideration, and to report.

LECTURES BY PROFESSOR TYNDALL "ON THE MOTION AND SENSATION OF SOUND."

On Thursday, Jan. 1, Professor Tyndall delivered the third of his course of lectures on this subject, dealing on this occasion with the vibration of reeds, strings, and plates. The fourth lecture was delivered on Saturday, Jan. 3, the topic being "Sounding and Sensitive Flames." At the commencement the lecturer alluded to the vibration of the strings of the Æolian harp produced by the action of wind, and to the fine sound given off by telegraph wires due to the same cause, the post acting the part of the sounding-board. He then adverted to the vibrations of bells, and made these evident on the surface of water in an inverted bell. When these vibrations were made very energetic in a glass bell spray was tossed into the air, and made visible when illuminated by electric light. By using alcohol spheroidal drops of spray were made to roll over the surface in a starlike figure. The lecturer showed how musical sounds may be augmented by a flame, made to act the part of a sounding-board; and then, in a series of experiments with flames inclosed in tubes, he showed how flames produce musical tones, the pitch sinking as the tube is lengthened. A powerful fundamental note was given off by a wide glass tube with an Argand burner, and the sound emitted by a long tin tube was violently explosive. Among many other interesting experiments was the exhibition of a flame upon the screen, by means of a concave mirror, first with the flame quiet, and then when singing. When the sound began, the continuous band of light was broken up into a series of flame images. This phenomenon was explained and illustrated by reference to the persistence of impressions on the retina. The lecturer then showed how flames in a tube may be started into song by sounding a note corresponding to their pitch; and the flame in a tube 13 inches long was silent until started by his voice. He next exhibited the influence of musical sounds on a parabolic jet of water, by means of the electric light. When a sound was produced the scattered drops gathered themselves together and formed a continuous arch, and the shadow was projected on a screen. This was followed by other exhibitions of the sensitiveness of flame to musical sounds. With a bat's-wing gas-burner, when the flame was at the point of flaring, the action of a whistle and other sounds was very evident, with the sound at a considerable distance. That such a flame is a very delicate acoustic reagent the lecturer showed in his concluding experiments. After exhibiting the reflection and refraction of light in the usual manner, he produced the same phenomena with sound, for which purpose he employed, instead of a lens, a collodion balloon filled with carbonic acid gas; the reflection and refraction being indicated by their evident action on the gas-flame from a steatite burner. This method of demonstration the lecturer said had never been seen before, even by philosophers, and to effect it he had to cut off, as far as possible, all sources of disturbance to the atmosphere, even closing all the ventilators of the lecture-room.

The fifth lecture was delivered on Tuesday, Jan. 6th, on "Vibrations of Rods—Resonance," and the lecturer commenced with illustrations of the difference between transverse and longitudinal vibrations, exemplified by vibrating rods and wires, the pitch of the tone varying with their length. Among the examples was the instrument termed the iron fiddle, and a kind of harp composed of a series of wooden rods of different lengths, shrill sounds being produced by friction with resined fingers. In regard to these sounds it was stated that at the point of highest vibration there is no change of density; but at the nodes, the place of no motion, the substance alternately contracts and expands. This fact was beautifully shown in a glass rod by means of polarized light (Biot's experiment). The light, which was excluded when the glass was at rest, passed through when it was put into a state of strain by sonorous vibrations. The mechanical effect of longitudinal vibrations was made evident by their driving off a suspended ivory ball touching one end of a rod of wood; and by their intensity these vibrations shivered a glass rod into annular rings. The different rates of conduction of sound possessed by various substances, due to their different densities, having been noticed and illustrated (such as the fact that sound travels faster in deal than in mahogany), thus affording a means for estimating the velocity of sound, the lecturer commented on and illustrated the analogy which exists between the vibrations of the substance of rods and those of air and other gases in pipes. Thus, a pipe stopped at one end vibrates in precisely the same manner as a solid rod fixed at one end. If the velocity of sound be the same in both, a rod and pipe of the same length will produce notes of the same pitch. When this is not the case the same pitch may be obtained by sufficiently lengthening the substance through which the sound travels more rapidly. The same analogy is found in regard to pipes open at both ends and rods free at both ends. The lecturer next adverted to the resonance of tubes. He demonstrated that columns of air of a definite length resound to tuning-forks of definite rates of vibration by means of jars of various depths placed under tuning-forks. He stated that the length of a column of air which most perfectly resounds to a fork is one-fourth of the length of the sonorous wave produced by the fork; the resonance being due to the synchronism which exists between the vibrating period of the fork and that of the column of air. By blowing across the mouth of a tube closed at one end a flutter of the air is produced; and the Pandean pipes were referred to as an example of pulses of this flutter being raised by the resonance of tubes to a musical sound. To this fact is also to be ascribed the sound of organ-pipes. In these the air is agitated by causing it to issue from a narrow slit and to strike upon a cutting edge. The pulse of the flutter is raised to a musical sound by the resonance of the pipe.

A New Year's Gift to the National Life-boat Institution.—Mr. David Hulett, of 55, High Holborn, presented to the above society, on the 1st inst., the sum of £750, to defray the expenses of forming a new station, with boat-house, life-boat, and all the requisite apparatus. This station will be at Lydd, near where the ill-fated Northfleet was run down.

Neath.—Proposed Transfer of the Gas-Works to the Corporation.—At the monthly meeting of the Neath Town Council, on the 5th inst., the report of the committee appointed to consider the question of the acquisition by the corporation of the undertaking of the Neath New Gas Company was read. It contained the following recommendation:—"That this committee recommend that the offer of the Neath New Gas Company, contained in the letter of the 30th of December last, for the purchase of their undertaking, be accepted, subject to the details of price and other terms and conditions being settled between this committee and the directors of the Neath New Gas Company; the contract to be deemed to take effect on the 1st of January inst., from which date the gas company to carry on the works until the completion as trustees for the corporation; the corporation paying 5 per cent. on the agreed purchase-money until the completion of the purchase; the contract to be subjected to confirmation by Parliament, to which end the gas company shall use its best efforts to facilitate the passing into an Act of the now pending bill which is being solicited by the corporation." After some discussion the report was adopted. The council subsequently resolved themselves into a special meeting of the corporation, to consider the provisions of "The Neath Corporation (Gas and Water) Bill, 1874," now pending in Parliament; also to consider the propriety of confirming the special resolutions passed in reference thereto by a special meeting of the council held on the 7th day of November last, and of continuing the promotion of the said bill in Parliament. A resolution approving the clauses of the bill, and confirming the decisions of the former meeting, was adopted.

LIVERPOOL WATER SUPPLY.

RESUSCITATION OF THE NEW WATER BILL.

The Monthly Meeting of the Liverpool Town Council was held on Thursday last, the 7th inst.—the MAYOR (Alderman Walker) presiding.

It will be remembered that at the meeting of the council on the 17th of December, the clauses of the original water bill having been discussed and agreed to, the preamble was put to the vote and carried by a large majority of the members present. By the provisions of the Municipal Corporations (Borough Funds) Act, the majority required to sanction an application to Parliament is a majority of the whole Town Council, and the majority of the 17th ult. lacked *one* of that number. The bill was, therefore, defeated. The importance of the question, however, was so strongly impressed upon the Water-Works Committee that they resolved to re-introduce the bill in a modified form, the only powers asked for being power to prevent waste, by giving the corporation a more complete control over taps and other fittings, and to check the pollution of the Dudlow Lane and Bootle wells. The bill, as amended, was now submitted for the approval of the council.

A memorial from the Land and Houseowners Association, asking the council not to proceed with the bill this session of Parliament, having been laid before the council,

Mr. WILSON, chairman of the Water-Works Committee, moved—"That the water bill be approved, with such amendments therein, as the council may deem advisable." He said he would first make a few observations upon the memorial of the Land and Houseowners Association. The first charge in the memorial was that the Water Committee sought to obtain arbitrary powers to enter private dwellings at any time. They already possessed that power under the act of 1846, and could cut off the water. The bill gave some additional powers which the Water Committee considered advantageous, and the only effect of preventing the committee from obtaining control over fittings would be that the Water Committee would have to double the number of inspectors. It was also suggested that the expense of removal or changing the fittings should be borne by the water account. As a matter of pounds, shillings, and pence, he believed it would pay the corporation to accede to that, but such a thing had not been done in any other town. It was likewise said that stand-pipes had not had much effect in diminishing waste. The erection of these stand-pipes was both a sanitary and a saving measure, as in court houses the fittings were so bad that noxious gases escaped from the sewers into the houses, and there was great waste of water. By the alteration of these taps into stand-pipes it was evident that a great gain must arise. The next point dealt with by the memorialists was that in the report which had been published by the engineer the result of the experiments in the various districts showed that there had been an increase in the waste since those experiments took place. There was a vast number of fittings in those districts which the Water Committee knew were bad and would leak, and the increase arose from further defects in private fittings. If they could once get the fittings right in a district, there was no doubt they could be kept in order at very little trouble and expense. The memorialists said that a great deal might be done by visiting the different neighbourhoods; but experience had proved that unless they could constantly keep an inspector on the spot warning the people, no good came of it. The pressure was also reduced to the lowest point. The memorialists had suggested that if the water-shed at Rivington was slated over, a very large amount of water would be saved by the prevention of evaporation. He found that the actual cost of slating was £387,200 per square mile, independent of the cost of timber and fittings, and there were 16 square miles which would require slating, so that the cost of slates alone would be £6,000,000 sterling. He thought that showed that in a matter of this sort the parties who could judge best of the necessities of the situation were those who had it constantly before them, and who had the services of engineers such as they had in Liverpool. Proceeding to deal with the question of the water supply itself, he went back to the year 1857, when Liverpool was first supplied with a constant service from Rivington, which was kept up until 1865, when the service had to be shortened, in consequence of the reservoirs running dry, first to twelve hours a day, then to seven hours, and finally to three hours a day. Since 1864 the stock of water had been added to by the purchase of the Roddlesworth compensation water, and by the yield from the wells being increased, the net gain being 3 million gallons daily. In 1864 the water-rate yielded only £115,000, but in 1873 it had increased to £167,000, and, taking that to represent the increased demand for water, it showed an increased demand equal to nearly 50 per cent.; whilst during the same period they had only added 20 per cent. to their means of supplying the water. The full hours of service had not been restored, and that was how they made up for the increased demand. Last year, finding they were getting short of water, they again shortened the service; but the end of it was that they received a notice from an out-townsip threatening the Water Committee with penalties in case of fire if the water was not turned on, and their responsibility was so serious that the committee felt they had no option but to turn the water on. This year they commenced with the reservoirs short by 600 million gallons, and with an increased demand of 5 million gallons. Those figures showed that they would require 860 million gallons more than in 1873, which would leave 640 millions at Rivington, assuming that they had an ordinary wet summer. The council must therefore draw their own inference as to what would happen in the case of a dry summer this year. They were now giving a supply of 125 million gallons a week, and the ultimate point that they could rely upon in dry weather was 126 million gallons per week, and they knew that before the end of the year they would have to face a rise of four or five million gallons more. They had come to the point that it was now unavailable to attempt to meet the supply by further shortening the service. As a member of the Water Committee he felt that a heavy responsibility rested upon them, but he considered that that responsibility was now transmitted to the council. Another point which he wished to notice was the state of the wells, two of which were in a most unsatisfactory condition, and in the case of an epidemic of fever or cholera would have to be closed. With reference to the statement that they had plenty of power to control the fittings, that was not the fact. It was true that they could send round a crowd of inspectors to hammer up the pipes, and compel them to be replaced; but that was unsatisfactory, as it involved a vast expense, and a great deal of annoyance to the public. Between now and 1880 they would have to provide an increase in the supply of water equal to 40 million gallons per week, and if any one would show him where that was to come from he should be satisfied. Under these circumstances he hoped the council would agree to proceed with the bill.

Mr. BELOE seconded the motion, which was supported by

Mr. FORREST, who said that whilst the consumption in Manchester was only 15 to 16 gallons per head per day, in Liverpool it was 25 gallons. If the council went for a bill to economize the supply of water, the cost would be ¼d. per 1000 gallons, but if they went in for a new scheme of supply the cost would be at the rate of 6d. per 1000 gallons.

Mr. FORWOOD moved as an amendment—"That the proposed Water Act be approved generally, but, having regard to the terms of the Borough Funds Act, which practically prohibits municipal corporations from promoting Acts of Parliament, however necessary, and as it would be unwise to expose the provisions contained in the bill to rejection at a poll of the owners and ratepayers by reason of the impracticability of the corporation canvassing and explaining the details of the bill to the ratepayers, it is inexpedient to proceed further with the measure; but that the Water Committee be instructed to consider the present and prospective water requirements of the district, with a view to preparing a complete scheme of water supply, and to report thereon." He said he believed the opponents of the bill would, when a meeting of the inhabitants was called, in all probability demand a poll of the town, and if such were the case, they would agitate and bring up voters, while the corporation would practically be unrepresented. There would be no one to impress upon the ratepayers the desirableness of supporting the bill. He did not wish to see a poll taken on the present question, because, if the decision were adverse, he did not think they would be able to get the powers required inserted in any future Act. It would be said, "You went to the ratepayers, and they decided against you." If this bill were passed, it would not make any immediate change in the water supply—it would not give an increased supply in the coming summer or the summer after; and he did not think that the delay of a few months, in order that a larger measure might be considered, would be of that serious moment to the town which the chairman of the committee would have them infer.

Mr. JENNINGS seconded the amendment.

Mr. BOWRING urged the corporation to proceed with the bill. He could conceive of no subject of greater importance than that of the supply of water to a population of 600,000 or 700,000 inhabitants of this town and neighbourhood; and he thought that those who had studied the question so well, as he was quite sure the Water Committee had, deserved the support and confidence of the council. Although the committee had purchased compensation water to the extent of 1,800,000 gallons a day, they were still supplying 45 millions a week in compensation; and he would ask the chairman whether this, which would be a very great assistance to them, could not be purchased.

Dr. TAYLOR said if the bill were carried, the committee believed they would be able to give the town a constant supply of water. He pointed out the bad sanitary effect that might follow from an intermittent supply, and alluded to the outbreak of fever in Sherburn in proof of this. If these were the dangers of an intermittent supply of water, did it not behove the council to give the Water Committee every assistance to give the town a constant supply? He was willing to give the Water Committee every assistance, so that the town might not be placed in the position it was in 1856, when there was an outbreak of cholera here. There were difficulties now standing in the way of the Water Committee in respect of this matter. There might be a series of dry seasons and a smaller supply of water; and he would ask, if they had such a dry season as that they had in the years 1865 and 1866, what would be the condition of affairs? If the Health Committee said the well water was not to be distributed, there would be a water famine; and not only would the supply of water be stopped for manufacturing purposes, but as one of the necessities of life to the people. It might not be nice for people to know that they were drinking sewage in the water, but such was the fact; and although it might not be attended with much danger now, the time might arrive when it would be exceedingly injurious. The Bootle wells had got worse and worse, and how long the Water Committee would be able to draw water from that district, he did not know; but he hoped that if they could get good water from any other source they would not take the water from these wells. They had had great experience of large schemes in the council. When the Rivington scheme was brought forward, very opposite views were taken. The council knew what was the estimate of that scheme, and they knew what was the ultimate cost. It was to be under half a million of money; but it cost three times that. Before the council could entertain any other large scheme, they must have the details of it effectually worked out, and full information placed before them, so that they might be able to arrive at a satisfactory conclusion, and not be led into the false position they were in in reference to the Rivington scheme. He saw no hope of being able to get any large scheme this year, the financial difficulties, not to mention the engineering difficulties, to it being great. The question of the water supply was one of life and death to a great many persons. They should not look upon it as a class question, but one of the most important sanitary questions ever brought before that council.

Mr. WHITLY, while concurring in all that had been said as to the importance of a constant supply of water to the town, felt that the proposed bill would rather delay than otherwise the prospect of obtaining a good bill for supplying the town with water. He objected to the arbitrary powers which the committee sought, and if the bill were adopted it would place additional taxes upon the ratepayers. When the making of the Rivington reservoir was proposed, it was stated that there would be an abundant supply of water for the next ten or twelve years. The sum of £90,000 was the price fixed upon, but what was the fact? They had gone to the expense of £158,000 instead of £90,000; and he was told that the reservoir would be ready at the end of the year, probably at the expense of another £20,000. The council should therefore well consider such statements as were made that day before going to another expense which would bear heavily upon the ratepayers. He would be prepared, when the time came, to support any water bill which was shown to be necessary; but he was not in favour of the present proposal, and would support the amendment.

The TOWN-CLERK, in reply to Mr. Picton, said that if a poll was demanded at the ratepayers meeting the council would be quite competent, after calling a special meeting, to direct that the bill should be then withdrawn.

Mr. PICTON said that, owing to the continued exactions and expense which the owners of property were put to by various charges, it had been actually found cheaper to shut up certain houses altogether. Therefore it became a serious question, looking at the future, where they were to stop. But there was one point which they should bear in mind—that, looking at the great growth of the town, there was a prospect of there being a deficiency in the water supply. The statement of the Water Committee proved that there was a large waste of water in the town, and it was said that if this could be prevented it would tide them over the time until another large or grand scheme would be required. It also had been shown that a great amount of waste of water could be prevented. With reference to the future supply, it was admitted that whatever temporary arrangement might be made it would be necessary to go elsewhere for another supply. They should never forget the circumstances of the Rivington scheme; and it should be a warning against rushing into magnificent schemes without sufficient consideration. He would suggest that a middle course be taken—that they should get this bill as a temporary measure; not upon it, and go forward for a larger scheme when they saw their way to do so. He was opposed in principle to this going to the poll, and hoped that those who opposed the bill would withdraw their opposition.

Mr. S. G. RATHBONE said the Water Committee told them that 20 per cent. of their water supply was polluted, and that there was a danger of further pollution, and that the sufficiency of the supply was in danger by great waste. The Water Committee also told them that if they passed this bill it would correct those evils. If the council endorsed that by approving of the bill by a large majority, he had no doubt the town would support that decision. He did not believe that the town would take advantage of an Act of Parliament (the Borough Funds Act) which partook of the spirit of the days of barbarism, but would support the decision at which the great majority of the council should arrive upon this question.

Mr. FORWOOD, seeing that the majority of the council was in favour of the bill, said he would withdraw his amendment, and vote for the motion.

On the motion being put, it was carried by 44 votes to 6.

The TOWN-CLERK stated, in reply to an inquiry, that another meeting would be required to confirm the resolution just passed. In the event of the council being adjourned for a fortnight, there would be time meanwhile to issue the requisite advertisement, and the resolution might be brought up for confirmation at the adjourned meeting.

MARKET REVIEW OF 1873.

Iron and Coal Trade.

It is now nearly two years and a half since the upward movement in prices of coal and iron first manifested itself, and the course of the trade during that time has been altogether unprecedented. It was anticipated by many that this movement would be short-lived and lead to a serious contraction in the demand, while production would be stimulated in an unusual degree. The undernoted statistics will prove that these anticipations have been entirely falsified by the actual facts :—

	Production of Pig Iron in Great Britain. Tons.	Average Price of Scotch Pig Iron.	Total Stock, Dec. 31, in Scotland and N. of England. Tons.
1867	4,761,023	53s. 6d.	644,345
1868	4,970,206	52s. 9d.	720,927
1869	5,445,757	53s. 3d.	735,607
1870	5,963,515	54s. 4d.	782,345
1871	6,627,179	59s. 0d.	558,331
1872	6,741,929	101s. 10d.	235,628
1873	6,850,000 (Estimated.)	117s. 3d.	185,000

It will be observed that the production during the last two years has been in a decreasing ratio when compared with the years immediately preceding. This, however, has been due in a large degree to the difficulties surrounding the labour question and the short supply of ironstone and coals. It should also be noted that this large production has all been absorbed in home and foreign consumption, and, in addition, stocks have been reduced 600,000 tons during the last three years. The figures which follow show what proportion of this production was absorbed by the export trade and the declared value of same :—

	Total Exports of Iron of all Kinds. Tons.	Value. £
1867	1,968,025	15,050,391
1868	2,041,853	15,036,398
1869	2,675,331	19,519,201
1870	2,825,575	24,038,090
1871	3,169,219	26,124,134
1872	3,388,622	36,060,547
1873	2,980,000 (Estimated.)	38,000,000

It thus appears that during the last three years we have received from our foreign customers a sum equal to £30,000,000 in excess of the price at which the same quantity of iron would have been purchased during any of the five years preceding. But to understand the full effect of the late advance we must look at coal. During the last two years it is estimated that 240,000,000 tons of coal were raised in this country. The average advance could not be less than 10s. per ton, but after making every allowance for long-dated contracts at low prices, &c., it is quite safe to assume that purchasers have paid on the average 7s. 6d. per ton more for coals than formerly. This represents an additional sum of £90,000,000, which has been distributed between the coal proprietors and miners in the shape of extra wages and profit. From the Board of Trade returns for the last two years it appears probable that we have recouped ourselves to the extent of £50,000,000 in the increased price charged to our foreign customers for iron, coal, machinery, hardware, chemicals, &c., and that the country is permanently enriched to that extent. The balance has been distributed over the general trade and manufactures of the country, together with the increased cost of coal to steamship owners, gas and railway companies, and domestic consumers. The year 1874 opens with the smallest stocks of iron ever known, both at home and abroad, and as the experience of the last two years has proved that the enhanced cost of iron has not seriously interfered with its use, a continued large demand may be anticipated. Raw materials, such as ironstone, coals, and coke, though somewhat cheaper, are still comparatively high, but there is no immediate prospect of any material reduction in prices, either from increased production or diminished consumption. The present quotations for manufactured iron are known to be unremunerative, and any increased demand would quickly prompt manufacturers to secure a fair profit for themselves. The relations of capital and labour still continue unsatisfactory, and the difficulties which have embarrassed the trade during the past two years may arise again, and assume even a more formidable aspect. —*Liverpool Daily Albion.*

Metals.

A review of the metal trade during the past year does not produce a pleasurable realization. Lead and spelter increased in value somewhat, but the latter closed at £3, or 10 per cent. lower than the highest point reached in the year, while iron is £3, or 19 per cent., and tin £20, or 20 per cent. cheaper than in January, 1873. Copper is £6 lower than at this time last year, or 6½ per cent., and £8 below the highest point reached. Dear money, dear coal, and dear labour have alike influenced all metals, and without doubt have tended to unprofitableness in their production and to a certain extent in their manipulation. As regards iron, coal and labour are alienating the trade from us to a degree perhaps not serious as yet, but the measure of alienation is a mere question of time.—*Circular of Messrs. H. Rogers, Sons, and Co.*

Freights.

The past year has been a fairly prosperous one for sailing vessels, but increased premiums of insurance and continued high prices of coal, with only moderate freights, have acted prejudicially against steamers. We commence the year with much better outward Indian freights than last year, both for general cargoes and coal. Ships are also in request at advanced rates for Australia and New Zealand, our carrying trade with these colonies having greatly increased, the tonnage despatched during the year being fully 30 per cent. more than in 1872. Homeward freights from the East are steady and likely to improve, unless materially affected by the quantity of rice diverted to Calcutta consequent upon the anticipated famine in India. Our trade with the east and west coasts of South America has been active, both outward and homewards. A large amount of tonnage was taken up during the year from Peru for guano, also for wheat from San Francisco. Rates at the latter port suffered a very heavy decline in the autumn, but are again hardening. There has been a very large business in grain and petroleum during the whole year from New York, Baltimore, and Philadelphia, at remunerative freights.—*Circular of Messrs. Galbraith and Co.*

Chemicals.

The chemical trade has again exhibited satisfactory progress during the year, and from the peculiar nature of its adaptation to the daily-increasing wants of the world, and the discoveries of science, bids fair to become more and more important. The actual transactions of 1873, however, were undoubtedly not equal to those of 1872, but this was caused by the operations between dealer and dealer being lessened, to which fact also may be attributed n some degree the decline in prices which has taken place in many of the eading articles. Not only does the consumption at home steadily increase, but the export trade generally expands also. The Board of Trade Returns up to the end of November last, under the head of articles classed alkali, show there were upwards of 13,000 tons more exported than during the year 1872 ; unfortunately, all other chemicals have necessarily to be classed under one heading in the returns, and the total value only is thus able to be given, but, from actual experience, it is well known that the export trade of these has also exceeded that of the previous year.—*Circular of Mr. W. Caudery.*

Petroleum.

The year's business in refined Pennsylvanian has been on a scale of extraordinary magnitude, as will be seen from the fact that, whereas the total exports from the United States to Europe for the whole of 1872 were but 3,523,297 barrels, they had up to the 12th of December last amounted to 5,462,389 barrels. The vast increase in demand which these figures attest has undoubtedly been brought about to a considerable extent by the wonderfully low prices which have prevailed throughout the twelvemonth ; but there can be as little doubt that the oil is more and more liked by all classes of consumers, and that in our own country it is now largely used in circles from which until quite recently it was, owing to prejudice and ignorance of its properties, rigorously excluded. How long the present low rates may continue it is futile to attempt to prognosticate. It is surmised that the recent monetary crisis in the United States has not been without influence upon prices, but it appears highly improbable that values should, for any lengthened period of time, remain at their present level. As regards the trade of the United Kingdom, the authorities have not this year harassed merchants and dealers generally by any further legislation, or attempts at legislation, on the subject of the vexed question of test. The law as it now stands is productive of sufficient embarrassment and loss, while it can easily be shown that the public are in no degree more secure than they would be were we, like our continental neighbours, allowed to import 110° American test instead of 120° oil.—*Circular of Messrs. Phillips and Webb.*

CHEMICAL, MINERAL, AND METAL REPORT,

For the week ending Jan. 10, 1874.

(*From Messrs.* Berger Spence and Co.'s *Circular.*)

Chemicals.—Since 1874 opened there has been an improved demand in nearly every department of the trade, stocks have been considerably reduced, and, in some instances, higher quotations established ; the general tendency being decidedly in favour of sellers. In the home trade the prospect is much more hopeful, and buyers are becoming more disposed to cover their requirements ; and now that the market has assumed a better position it may be expected that contracts which were withheld when prices were declining will be more freely placed. The American demand is still dull, and the alkali trade is therefore in an unsatisfactory condition. The total exports of last year were 15,000 tons in excess of the previous one, and it is a favourable feature that, although November showed a falling off, yet December, 1873, was nearly 2000 tons in excess of December, 1872. Cream caustic soda has advanced 5s. per ton, and is now quoted at £17 ; white unchanged. Soda crystals slightly easier. Sulphate of ammonia in more active demand, and sellers are now asking £17 15s. per ton.

Minerals.—The price of coal and iron has been considerably reduced ; 1874 has opened certainly less promising than 1873, but in comparison with the closing months of the past year there is undoubtedly a change for the better in the opening of the present one, and it is pleasing to record that so far the mineral market has been in a condition of fair healthy activity. The demand has been about equal to the supply, and it is evident that on all hands the production has very materially increased. There is yet room for improvement in the out-put of coal, so as to bring prices to a much lower level, and we expect that reduced quotations, introduced when the year began, will be followed by yet further concessions on the part of colliery owners. Their profits will admit of such, and the general trade of the country would be benefited. There is still an extra demand for hematite iron ore, in consequence of the continued stoppage of Spanish supplies. At Redruth, on the 1st inst., 1363 tons of copper ore realized £52,226 ; average produce, 6¾ per cent.; average price per ton, £3 16s. 6d. At Swansea, on the 6th, 2247 tons of ore and regulus, an average of £10 11s. 7d. per ton ; average produce, 14⅛ per cent.; price per unit, 15s. 0¼d., being 2¾d. less than last sale. Tin ore is still at a low point ; £24 per ton cheaper than in March, and £20 cheaper than in January, 1873. Lead ore still high, and in the absence of foreign supplies likely to continue so.

Metals.—The new year opens with a cheerful feeling in this market, for, although trade is rather restricted just now, it is fully expected that with the advance of spring we shall find an improvement, and that our producers will again be fully taxed to meet all the requirements on their resources. A good business is doing in warrants for Scotch pig iron, and prices have not varied much during the past fortnight. The shipments for the past week show the holiday character of the season, and are returned as 4214 tons, against 5701 tons in the corresponding week of last year. At the quarterly meeting of the iron trade, held at Middlesborough on Tuesday last, prices were very firm, and a fair amount of iron changed hands, and more might have been placed had not smelters withheld selling except at an advance. The total make of the Cleveland district during 1873 amounted to 1,999,491 tons, and the stock in makers hands is now 80,328 tons, or about a fortnight's, production. At Birmingham, on Thursday, there was a full attendance, and prices for marked iron remaining unchanged, the meeting passed fairly satisfactory. Copper is in moderate inquiry. Tin is slightly improving, and the announcement that only 20,800 slabs will be offered at the Dutch Banca sale on the 29th inst. may tend to strengthen it still further. Lead is very firm, and prices fully maintained. There is little doing in spelter. In sheet zinc 135 tons were sold by auction in London this week, at prices varying from £30 5s. to £30 10s. per ton.

Institution of Civil Engineers.—This society has recently entered upon its 57th year, having been founded on the 2nd of January, 1818. During the past month, eight associates have been transferred to the class of members, four members and 45 associates have been elected into the corporation, and 43 candidates have been admitted by the council into the class of students attached to the Institution. The numbers of the several classes on the books on the 1st inst. were 15 honorary members, 778 members, 1246 associates, and 290 students; together, 2329, as against 2193 at the same date last year.

Buenos Ayres Gas Company.—The meeting to-day of the shareholders of the Mutual Gas Company at the Victoria Theatre was the largest assemblage of gas shareholders ever seen in this city. By two o'clock more than 200 persons had assembled, filling the pit and lower tier of boxes. The minutes of the last meeting were read by the secretary, Mr. Bustamante, after which the chairman, Dr. Beccar, presented his report of the directors labours during the last 18 months : 17,300 shares had been subscribed for, leaving 2700 yet to be filled in ; six-tenths of the total piping had been laid, say 1000 squares, and all the materials were in port. The works were far advanced, and would, without fail, be ready to commence operations on March 1 next ; 2298 service pipes, including the cathedral and bishop's palace, and other public establishments, had been put down, and even although some should change their minds, the company would have a splendid start. All the materials had been imported duty free, thus effecting a saving of $3,000,000 m/c. Some discussion took place as to the nomination of directors, resulting in a unanimous vote in favour of the actual members.—*Buenos Ayres Standard*, Dec. 5, 1873.

Bohemian Gas Company, Limited.—The gas-works at Smichow, which have been in existence and successful operation during the last 17 years, have been transferred to this company, by whom it is proposed to carry on the undertaking during the term of a new concession just obtained from the Municipality of Prague. The capital of the company is £100,000, in 1000 shares of £10 each,

and the first issue consists of 500 shares, on which a dividend of 7½ per cent. for the first five years is guaranteed. The works have been reported upon by Messrs. W. Romans and G. W. Stevenson, who visited Prague last July for the purpose of inspecting the same. They state that the works are well designed, substantially constructed, and in good repair, and that the annually increasing consumption of gas in Smichow promises to make the undertaking a desirable investment, the present return on a capital of £75,000 being equal to 10¼ per cent. The best gas coal is to be obtained within a short distance of Prague in practically unlimited quantities, and there is railway accommodation from the mines into the works of the company. Smichow is a suburb of Prague, with a population of about 26,000 persons, and it is in this neighbourhood alone that building operations and extensions in connexion with the Bohemian capital can take place. The prospects of the gas company are therefore very encouraging.

Pontypool Local Board and the Gas Company.—The relations between these two bodies are not of the most amicable character, judging from the report of proceedings at the meeting of the former on the 2nd inst. On that occasion a letter was read from Mr. Hair, secretary to the gas and water company. He said (with reference to the suggestion of the board that there should be one test lamp filled with a Sugg's patent governor) that there were nearly a dozen of such governors fixed in conspicuous places in the town already, which, he said, "shows the groundless nature of the complaint when you cannot discover a difference between them and the lamps that have got them." He added that the board had themselves to blame for the late hour at which the lamps were lighted, as the company made it a condition that they should go to the expense of altering the whole of the lamps, so that they could be lit by a torch, but the board preferred things as they were, and no doubt some parts of the town suffered in consequence of their determination to keep Pontypool a quarter of a century behind most neighbouring towns in the matter of lighting the street lamps. He denied that the quality of the gas supplied to private houses was bad, and he added that the directors had ordered a complete set of photometric instruments, so that an end might be put to all groundless complaints as to the quality of the gas. It was most unjust and unfair towards the gas company, for parties who had gas-fittings and meters altogether unequal to pass the supply they now required to rush to the local board and complain of the bad quality of the gas, when the gas had really nothing to do with it, the simple fact being that their requirements having increased, they had not yet considered it necessary to increase the size of the gas-fittings in proportion. Mr. Davies and Mr. Conway denounced this letter as "most insulting from the servant of a public company to a public board," and they urged that some strong official opinion should be expressed about it. The chairman explained that he was to blame in the matter of the test lamp, for he did not reflect that a meter would be also required. It seemed that the complaint as to the bad quality of gas in private houses was made by Dr. Essex, and that Mrs. Essex had since said there was nothing to complain of. Mr. Wood reminded the board that the financial year was drawing to a close, and he recommended that some definite arrangement should be made as to the rate for gas for the public lamps for the coming year. After a warm discussion, in which Mr. Conway complained that £30 was charged for a year's supply of water to the town-hall, while he thought that £1 would be ample (the chairman explained that the water was consumed by meter), and as to the gas supply, that the mains belonging to the company were not sufficient for the quantity at present required by the town, it was resolved, on the motion of Mr. Eckersley, seconded by Mr. E. H. Davies, that a committee should be formed, consisting of the whole of the members who are not shareholders of the gas and water company, to go into these matters, and to report thereon at the next meeting.

Cooking by Gas.—At the meeting of the St. Pancras Guardian Board on Thursday last, the special committee appointed to consider and report upon the desirableness of cooking by gas at the Leavesden Schools, and also to investigate the merits of Skoines's patent for gas-making, brought up their report, stating that they had met on three occasions, and given their best attention to the subject. They first proceeded to the London Hospital to inspect the gas cooking apparatus in use there, which consisted of a well oven (Leoni's patent), a large kitchener, two small ovens, two larger ones, a steam chest for boiling without water. They then proceeded to the Poplar and Stepney Sick Asylum, where the same patent apparatus was in operation—viz., two large ovens and one stand for grilling. In order to ascertain if any improvement had been made since the erection of this apparatus, the committee invited the attendance of Mr. Leoni, the patentee, at St. Pancras Workhouse, and informed him of the requirements of the Leavesden Schools, and asked him to suggest the most suitable apparatus, and approximate cost. The recommendation was as follows:—Roasting and baking: Two ovens in large kitchen, costing about £180.—Roasting, baking, grilling, and stewing: Kitchener in training kitchen, £24. Boiling: Steam chest in large kitchen, £55; making a total of £259. They had obtained a statement of the consumption of meat during the ninth week of the last quarter, and the saving by adopting this system in the difference of waste alone would be £5 3s. 4d., equal to £260 per annum. The weight of meat on which this calculation was taken was 970 lbs. The committee, considering the results so fully verified by the disinterested testimony of the House Governor of the London Hospital, and the medical superintendent of the Poplar and Stepney Sick Asylum, recommended the erection of the apparatus suggested by Mr. Leoni, as it was certain that the outlay would be repaid by the reduction of waste alone in twelve months. The cost of fuel would be reduced. Irrespective of all saving of fuel, as the gas was manufactured on the premises, additional advantages would be secured. They recommended that the same be approved by the guardians, and that, subject to the approval of the Local Government Board, the works be carried out as suggested, and further, in the event of obtaining the sanction of the Local Government Board to the proposed alteration and expenditure, which must be done by Mr. Leoni, the patentee, they be requested to suspend the operation of articles 52, 53, and 54, in respect of advertising for sealed tenders, and that the committee, upon the receipt of the sanction of the Local Government Board, be empowered to carry out the whole of the said works. On the motion to adopt the report, objection was taken by several of the guardians to the outlay of so large a sum of money as was asked for by the committee, and it was contended that if cooking by gas was adopted, the girls in the school could not be trained to cook for other persons who used coals for the purpose. Eventually an amendment was proposed and carried to adjourn the further consideration of the question for three months.

Register of New Patents.

912.—Symington, R. S., Glasgow, "*Improvements in apparatus for dealing with sewage, or other refuse or waste, so as to lessen the pollution of rivers.*" Provisional protection only obtained. Dated March 14, 1873.

This invention consists of improvements in apparatus for the better carrying out of a former patent by the same inventor, No. 2667 of 1868.

In one modification, a neat and slightly cast-iron structure is used, being of a rectangular form in plan, and also of having a rectangular contour in elevation, but with an arched space beneath the middle part of it. This cast-iron structure is provided with two inlets at the top, one for the connexion of a soil-pipe from a series of water-closets, and the other for the connexion of a waste-pipe from a series of sinks or jaw-boxes, baths, wash-hand basins, or the like. There are a compartment for solid matters and two filtering compartments for the liquids, whilst beneath there are receptacles for ashes and for vegetable and animal refuse. Various modifications are indicated.

933.—Lake, W. R., patent agent, Southampton Buildings, London, "*Improvements in rotary pumps for lifting and forcing water.*" A communication. Patent dated March 14, 1873.

This invention relates to improvements in pumps of that class in which an eccentrically mounted piston revolves upon its shaft within a cylindrical case, and which are known as rotary pumps; and it consists mainly in a novel construction and arrangement of the piston and its connexion with an adjustable operating eccentric by means of conical or other shaped friction rollers, either with or without centres, whereby all the working parts are caused to run with the least possible friction. It further consists in the employment of an india-rubber packing upon the outside or inside cylinder, or both, and a rolling contact of the parts, which gives smoothness and close fit.

967.—Haseltine, G., Southampton Buildings, London, "*Improvements in pump pistons and valves.*" A communication. Patent dated March 15, 1873.

This invention relates to pumps in which a reciprocating valve-piston is employed, and consists in the combination with the valve-plunger or carrier of an independent-acting sectional ring, to serve both as a packing and as a supporting valve.

993.—Merriman, J. D., East India Road, London, "*Improvements in apparatus for lighting and extinguishing public and other lights.*" Provisional protection only obtained. Dated March 18, 1873.

This invention has reference to the use of electricity for the purpose of lighting and extinguishing public and other lights, and the application of the same consists in placing at the gas office or works a battery, which is made to communicate with each lamp. Connected to the service-pipe, at the top of the lamp-post, is a cock furnished with a lever, the end of which is attracted by a magnet, and thus opens the cock. The other end of the lever is formed into a fork to hold an arm fixed to a coil-spring, which gives motion to a hammer that strikes the nosepiece near the burner, when a spark is emitted, and the gas lighted. When the gaslight is to be extinguished, the magnet is demagnetized, the armature is released, the cock closes, and the gas is shut off, the light being consequently put out.

1002.—Perrier, J., 39, Bedford Square, London, "*Glass gas chimney, capable of resisting any degree of heat without bursting.*" Provisional protection only obtained. Dated March 19, 1873.

A number of glass columns are placed horizontally side by side to form a circle, these columns being fastened at each extremity by a metal ring, which keeps them closely together, and forming a glass chimney similar to the ordinary chimney, but having the advantage of resisting any degree of heat without bursting, and giving a more brilliant light.

1012.—Jaynor, A., of Regent's Park, London, "*Improvements in the construction of automatic telegraphs to be worked by air, steam, or gas.*" Provisional protection only obtained. Dated March 19, 1873.

The features of novelty of this invention consist in constructing automatic telegraphs in a more simple manner than that described in the specification of a former patent, Dec. 9, 1872, No. 3735.

937.—Deacon, G. F., Liverpool, "*Improvements in apparatus for measuring the flow of water in pipes.*" Patent dated March 14, 1873.

The object of this invention is to provide a simple means of measuring the flow of water in mains or branch mains used for the supply of water, more particularly for the purpose of ascertaining when the consumption, owing to waste or otherwise, increases unduly. To effect this object the varying velocity of the water within the main is caused to act upon a disc, ball, or other object, partly filling such main, and supported in the waterway thereof by a lever, arm, or other instrument, which, by being connected with a weight or spring, has a tendency to maintain a certain position for every particular velocity of flow. By this means the velocity of the water and indirectly the quantity of water passing through the main at any given time, will, if the apparatus has been previously adjusted be indicated by the inclination of the arm, and this may be made visible in any desired manner on a suitable scale.

In order also to be enabled to ascertain the velocity at all times and without constant inspection, the arm or moving part in question, or some other part connected therewith, may be caused to draw a diagram on a cylinder, disc, plane, or other surface moved by clockwork, in any of the various and well-known means in use for obtaining diagrams of the motion of a point.

1046.—Baggs, I., High Holborn, Middlesex, "*Improvements in the manufacture of gas for illuminating and other purposes.*" Patent dated March 20, 1873.

These improvements consist in passing mixtures of hydrogen and carbonic acid gases, or of hydrogen and carbonic acid gases and carbonic oxide however produced or eliminated, through a heated "scrubber," placed vertically and filled with pieces of charcoal, coke, iron, or other suitable substances, so that the carbonic acid which passes by filtration through the heated mass is converted into carbonic oxide, whilst the hydrogen and carbonic oxide (when the latter is contained in the mixture) pass by unaffected in their chemical character.

Instead of merely purifying the gas as above described, the generation and purification in one process is preferred. Two or more vertical scrubbers charged with suitable carbonaceous materials are arranged as a series, and the whole heated to a high degree. Steam is admitted to the first of the series, alternately ascending and descending, or *vice versâ*, through the same. The scrubbers are heated, by preference, by means of the hot blast.

1059.—Forrest, T., Irvine, N.B., "*Improvements in steam-pumps.*" Patent dated March 21, 1873.

This invention relates principally to steam-pumps of the kind in which the pump, which may be either reciprocating or rotating, is worked by means of a special steam cylinder or combination of cylinders, and consists in fixing in either the delivery or suction pipe of the pump, but by preference the latter, any suitable modification of apparatus of the kind known as "injectors" or "ejectors," such apparatus having connected to it a pipe leading from the exhaust port of the steam cylinder.

1063.—Palmer, G. B., Hammersmith, "*Improvements in ball-valves.*" Provisional protection only obtained. Dated March 21, 1873.

According to these improvements the valve is so arranged that the pressure of the water or other fluid acts on the back of the valve to close it upon its seat in place of on the face to open it as heretofore. The descent of the float acts on the stem to open the valve.

1066.—Jobson, E. W., Derby, "*Improvements in apparatus for controlling the supply of water to water-closets, and like places, and in effecting the measurement of the water supplied for such and other purposes.*" Patent dated March 21, 1873.

This invention has for its object to ensure a definite supply of water in the flushing of water-closets, urinals, and such like places.

The outlet passage from the supply cistern to the delivery is provided inside with a syphon tube, or a tube capable of acting as such on depression of the arch or upper part below the water line or on the supply of such part of the syphon with water to create a current in it. This depression is effected by the lever or other connexion for opening the passage acting on the syphon tube; and the syphon tube is capable of the desired depression below the water-line by being formed of flexible material, or partly of metal and partly of flexible material, or by its turning on a pivot or hinge. The lever or other connecting means, when depressing the syphon, acts by a connexion to support the ball lever of the supply tap to this supply cistern; or this supply may be effected so that no fresh water may enter that cistern until the syphon

passage has been allowed to rise again; and, by the outlet passage being so much larger than the supply pipe, the cistern will at once empty itself to the level of the mouth of the syphon and admit air thereto, preventing a further flushing until the supply cistern is replenished and the syphon is again depressed.

1072.—HARRISON, C. W., High Holborn, "*Improvements in apparatus for charging or impregnating atmospheric air with the vapour of hydrocarbon liquids.*" Provisional protection only obtained. Dated March 22, 1873.
The specification of this invention describes charging atmospheric air with the vapour of hydrocarbon liquids by passing the air over a greatly extended surface of the liquid by means of an extended channel formed on the under surface of a float on the hydrocarbon liquid, and in afterwards combining pure air with the gas or vapour.

1086.—SKOINES, H., Argyle Street, King's Cross, "*An improved combined apparatus for manufacturing gas for lighting, heating, and cooking.*" Patent dated March 24, 1873.
This invention relates to certain improvements in the construction of apparatus for the manufacture of gas, applicable for the lighting and heating of mansions, public buildings, churches, conservatories, private dwellings, and other purposes; and in order to effect these objects it is proposed to place a retort or retorts over a furnace or fireplace, which retort or retorts will be heated thereby, for the purpose of making gas from coal, or any oleaginous substances; the fuel used for heating will also be applicable for cooking and other domestic purposes, as well as heating a range or ranges of hot water-pipes or steam or hot water-chests for warming buildings.

1123.—MOODY, E. T., Templecombe, Somerset, "*Improvements in the manufacture of illuminating gas.*" Provisional protection only obtained. Dated March 26, 1873.
The improvements consist in passing air through a vessel filled with capillary or absorbent substance into which petroleum or its lighter products are introduced. The air charged with vapour is then carried off to be burnt.

1129.—BARLOW, H. B., Manchester, "*Improvements in pneumatic pumps.*" A communication. Patent dated March 26, 1873.
This improved pneumatic pump consists of two chambers united by a bent pipe, and resembles a syphon barometer. The two chambers must be of the same capacity, and they as well as the bent pipe are filled with oil or other suitable liquid. The lower one is provided with a plunger which is worked by a steam-engine or other power, and the upper one, in which are the valves, is in communication with the vessel in which the vacuum or partial vacuum is to be formed.

1131.—LANDAU, M. I., St. Mary Axe, London, "*Improvements in lamps and apparatus for lighting, also in furnaces, fireplaces, and stoves or apparatus for heating, and in instruments for kindling lights, part of the improvements being applicable for ventilating.*" Patent dated March 26, 1873.
At the lower part of the lamp or lighting apparatus, described in this specification, is a chamber or box, into which air is forced or otherwise admitted. It sometimes contains a fan or agitator. A bent or tortuous tube is fixed at the top of the lamp, combined with a blower. The heat is condensed in this tube, and there are arrangements for removing condensation water. Instead of miners lamps and the like being separate and portable, they may be fitted in frames in the mine galleries or elsewhere, the frames of the lamps being moveable, hence a number of lamps may be properly controlled. The tube mouth may have a valve opening outward, and a perforated rim or case may be fitted over the lower part of the lamp, so as to close the perforations. These arrangements may be applied to furnaces, fireplaces, or heating apparatus. The bent tube may be used for ventilating. Miners and others may obtain a supply of air from the air chamber. A kindling instrument is also described consisting of a rod terminating in a light protected by wire gauze or other like material capable of being opened or closed. An elastic screen is within the lamp, perforated for the admission of the kindler. A tube bent or otherwise is added to fireplaces within a chimney or flue, doors being so disposed that the heat may be conveyed into the place to be warmed instead of being wasted. The tubes may be carried from one fireplace into several rooms.

1193.—CLARK, A. M., Chancery Lane, "*Improvements in apparatus for the manufacture of gas for lighting and heating purposes.*" A communication. Provisional protection only obtained. Dated March 31, 1873.
This apparatus consists of a series of double-acting bellows, each operated by crank-arms on a rock shaft, the several rock shafts being driven from a main shaft by a weight, steam, or other power. The bellows serve to force a continuous current of atmospheric air through a vessel containing horizontal perforated divisions filled with wool, through which petroleum or other liquid hydrocarbon (supplied from a reservoir by a chain of buckets) is made to descend in minute jets and being met by the ascending current of air becomes vapourized, rendered inflammable, and conveyed away for use. A regulator is interposed between the bellows and the carburotting vessel to maintain a uniform supply of air.

1204.—FORBES, Rev. G. H., Broughton, Northampton, "*An improved compound to be used in the manufacture of cement, plaster, artificial stone, and other similar materials, also applicable for use as fuel.*" Provisional protection only obtained. Dated April 1, 1873.
This invention relates to a compound of chalk or limestone, tar, or other bituminous matter, vegetable or animal oil or fat, or fatty matter, naphtha with or without petroleum, being burned, then crushed, and finally pulverized. When the compound is to be used as fuel it is made into balls of convenient size.

1244.—THOMAS, A., Alton, Hants, "*Improved means of and appliances for relieving gas-retorts from pressure, and for hermetically sealing the joints of hydraulic mains of gas-works.*" Patent dated April 3, 1873.
This invention, which was described and illustrated in the JOURNAL of Aug. 12, 1873, No. 545, page 729, consists of a moveable cup which is placed in the hydraulic main between the retort and the condenser, and can be raised or lowered by mechanism to hermetically seal the joint or open it as desired.

1251.—HARPER, J. R., Clerkenwell, "*Improvements in gas-lamp blow-pipe apparatus, part of such improvements being applicable to other oil and spirit lamps.*" Patent dated April 4, 1873.
The first part of these improvements has for its object the combination of a current of air with the jet of ignited gas or vapour as it issues from the oil or spirit vessel and jet-pipe of such apparatus. The jet-pipe is surrounded by or enclosed within another pipe open at each end, so that when the jet of gas or vapour is ignited, a strong current of air is caused to enter the pipe behind the jet of ignited gas, with which it combines, thereby increasing the intensity of the flame so produced. By reason of this improved arrangement the flame of an auxiliary lamp can be dispensed with. Another part of these improvements relates to the arrangement and construction of the safely valves of such apparatus. The safety valve is surrounded with a case to receive the gas when it escapes through the safety valve and conduct it to the jet-tube, where it is consumed with the gas from the jet. In accordance with another part of these improvements the oil or spirit vessel is formed with a chamber or passage through which the gas-jet and safety-valve tubes are conducted in order to afford ready access to the gas-cocks and apparatus.

1252.—WISE, W. L., Adelphi, Middlesex, "*Improvements in rotary pumps.*" A communication. Patent dated April 4, 1873.
This improved pump is constructed with a body or casing, closed by a cover and provided with flanged inlet and outlet. The box or casing and its cover, forming the body of the pump, are traversed by two shafts. On one shaft is keyed a rotating drum or cylinder, fitting truly within the body of the pump, and carrying diametrically opposed to each other two packed wings, each having a surface equal to the sectional area of the annular space between the casing or box and the drum or cylinder. On the other shaft is fixed another drum or cylinder, whose periphery touches that of the drum or cylinder first named. The shafts or axles carry outside the body or casing two toothed wheels, whose relation to one another is as two is to one, so that, in turning, the two wings of the lower cylinder alternately enter an epicycloidal channel or recess made in the upper cylinder. A stop partition in the upper part of the interior of the body prevents direct communication between the inlet and exit passages. This partition is hollowed or recessed over the whole length of the upper cylinder in a position to counteract the pressure, against its exposed part, of the column of water to be raised. This recess can be put in communication with the exit pipe. Above and laterally the liquid enters the body of the pump by suitable enlargements, and is forced back by other enlargements, so that there is neither compression on the side of the forcing-back pipe, nor vacuum caused to the suction pipe when the wing leaves the channel or recess of the upper cylinder.
The invention also relates to modifications of the above description of pump.

1255.—WEST, J., gas engineer, Maidstone, "*An improved method of manufacturing gas, and for the apparatus employed therewith.*" Patent dated April 4, 1873.
An illustrated and full description of this invention will shortly appear in this JOURNAL.

1256.—T. G. WOODLEY, West Bromwich, "*Improvements in joints for joining metallic pipes and tubes.*" Provisional protection only obtained. Dated April 4, 1873.
According to this invention the two flanges on the ends of the pipes or tubes to be joined together are fixed thereon by expanding or coning the ends, instead of screwing the flanges thereon as usual. Between the flanges a tubular packing-piece is inserted, having a ring at its middle and tapering on either side towards the ends of the packing piece. When the tubular packing piece is inserted, and the flanges are fixed together by screw-bolts and nuts, the conical parts of the packing piece fit in and support the ends of the pipes, while the central ring forms a washer between the two flanges by means of which a tight joint is made.

APPLICATIONS FOR LETTERS PATENT.

24.—CURTIS, F., Boston, U.S.A., "Improvements in lamps." A communication. Jan. 2, 1874.
25.—GOTTHEIL, R., Berlin, "Improvements in motors to be worked by gas." A communication. Jan. 2, 1874.
26.—FORBES, Rev. G. H., Broughton, Northampton, "Improvements in the manufacture of gas for illuminating and heating purposes." Jan. 2, 1874.
28.—FORBES, Rev. G. H., Broughton, Northampton, "A new or improved compound to be used as fuel." Jan. 2, 1874.
34.—FORBES, Rev. G. H., Broughton, Northampton, "Improvements in compounds designed for the manufacture of cements, plaster, or artificial stone, capable also of being used for artificial fuel." Jan. 2, 1874.
58.—BOUSFIELD, G. T., Sutton, Surrey, "Improvements in rotary engines and pumps." A communication. Jan. 5, 1874.
70.—CLARK, A. M., Chancery Lane, "Improved apparatus for regulating the pressure and friction of fluids." A communication. Jan. 6, 1874.
77.—FOTTRELL, J., Dublin, "Improvements in artificial stone pipes and tubes, and in the coating or lining thereof, to render them suitable for the conduit of alkaline liquids and acid products from chemical, manure, and gas works, for sewage, saline liquids, and gas." Jan. 7, 1874.
84.—BROOKES, W. H., Birkenhead, "Improvements in pumps." Jan. 7, 1874.
112.—FARQUHAR, J. F. C., Long Acre, "Improvements in gas-burners." Jan. 8, 1874.
117.—LIGHTBODY, W., Bow, "Improvements in lamps." Jan. 8, 1874.

GRANTS OF PROVISIONAL PROTECTION.

3833.—GREEN, B., Plaistow, Essex, "Improvements in storing and treating sewage, and in apparatus or appliances used therefor or in connexion therewith." Nov. 24, 1873.
4163.—WALKER, W. T., Highgate, "Improvements in and in the method of working gas-purifiers." Dec. 18, 1873.
4175.—SANSON, P., Lewisham, and PARKER, W., Catford, Kent, "Improvements in the construction of safety-valves." Dec. 19, 1873.
4229.—JACQUET, F. A., Paris, "Improvements in portable gas-cooking apparatus." Dec. 24, 1873.
4230.—JACQUET, F. A., Paris, "Improvements in gas-heating apparatus." Dec. 24, 1873.
4264.—DEACON, G. F., Liverpool, "Improvements in apparatus for indicating the velocity or measuring the flow of water in pipes." Dec. 29, 1873.
4273.—LOGAN, A. W. A., Rochdale, "Improved apparatus for cleaning pipes or tubes." Dec. 30, 1873.
4285.—BECKITT, W. H., Chelmsford, "Improvements in the construction of valves." Dec. 31, 1873.
4294.—CLARK, A. M., Chancery Lane, "Improvements in the manufacture of gas and fuel." A communication. Dec. 31, 1873.
3.—LAMONT, J., Glasgow, "Improvements in the manufacture of illuminating gas, and apparatus or mechanism connected therewith." Jan. 1, 1874.
6.—GOTTHEIL, R., Berlin, "Improvements in the apparatus for measuring the heat of fluids passing through pipes." A communication. Jan. 1, 1874.

INVENTIONS PROTECTED FOR SIX MONTHS ON THE DEPOSIT OF COMPLETE SPECIFICATIONS.

24.—CURTIS, F., Boston, U.S.A., "Improvements in lamps." A communication. Jan. 2, 1874.
58.—BOUSFIELD, G. T., Sutton, Surrey, "Improvements in rotary engines and pumps." A communication. Jan. 5, 1874.
70.—CLARK, A. M., Chancery Lane, "Improved apparatus for regulating the pressure and friction of fluids." A communication. Jan. 6, 1874.

NOTICES TO PROCEED.

2842.—WALSH, W. J., Birmingham, "Improvements in gas and other lamps." Aug. 28, 1873.
4128.—DUTY, G. D., Mansfield, "Improvements in apparatus for measuring and delivering water." Dec. 16, 1873.

PATENTS WHICH HAVE PASSED THE GREAT SEAL.

2482.—KNAB, D. C., St. Denis, France, "Improvements in the mode of utilizing the products of distillation of combustible, vegetable, and animal matters in the production of gas." July 19, 1873.
2503.—WHEELER, C. G., Chicago, U.S.A., "An improved apparatus for distributing water, and regulating and controlling the passage of fluids through pipes or tubes." July 21, 1873.
2544.—MAIN, E. W., Newcastle-upon-Tyne, "An improved sanitary safety-valve for preventing the admission of foul air and gases into dwelling-houses, and their escape from common street sewers and drains." July 25, 1873.

Share List
OF
Metropolitan Gas and Water Companies.

(*Corrected by Mr.* F. N. GOLDING, *Sun Court, Cornhill, from the latest Stock Exchange Quotations.*)

Number of Shares issued.	Amount per Share.	Name.	Amount paid up p. Share.	Dividend p. Cent. p. Annum.	Latest Quotations.
	£	GAS COMPANIES.	£ s. d.	£ s. d.	£
8000	20	Anglo-Romano	20 0 0	10 0 0	22 — 24
5000	20	Bahia (Limited)	20 0 0	3 0 0	9 — 11
1000	20	Do., preference	20 0 0	10 0 0	25 — 27
750	20	Do., do., redeemable	20 0 0	10 0 0	22 — 24
40000	5	Bombay (Limited)	5 0 0	6 15 0	5½ — 6
10000	5	Do., fourth issue	4 0 0	6 15 0	4½ — 5
10000	20	British (Limited) (Norwich, Hull-Sculcoates, Hanley, Tunstall & Shelton [Potteries], Trowbridge., and Holywell.)	20 0 0	10 0 0	33 — 35
7500	20	Cagliari (Limited)	20 0 0	7 0 0	15 — 16
160000	10	*Chartered* A shares	10 0 0	10 0 0	14½ — 15
20000	10	Do., A	10 0 0	10 0 0	4 —4½ pm.
10000	10	Do., B shares, 4 per cent. max.	10 0 0	4 0 0	6½ — 7½
25000	10	Do., 5 per cent. preference	10 0 0	5 0 0	12½ — 13½
20000	10	Do., 5 per cent. preference, second issue	10 0 0	5 0 0	12⅝ — 13½
20000	10	Do., 10 per cent. preference	10 0 0	10 0 0	19½ — 20
12000	25	Do., D shares	25 0 0	10 0 0	48½ — 49½
17490	100	*Commercial*	100 0 0	10 0 0	154 —157
20000	20	Continental Union	20 0 0	8 0 0	20¼ — 21½
10000	20	Do., new	12 10 0	8 0 0	¼ dis— par
10000	10	Do., new, 1872	2 10 0	8 0 0	¼ dis—¼ pm.
10000	20	Do., preference (Grmny.: Strsbg. France: Cette, Nismes, Montargis Vienne, Roanne, Beaucaire, Rueil, Albi. Italy: Milan, Genoa, Parma, Modena, Alessandria, Messina.)	20 0 0	7 0 0	23 — 25
5000	10	*Crystal Palace District*	10 0 0	10 0 0	15½— 16
5000	10	Do., preference	10 0 0	6 0 0	12¼— 13½
10000	10	Do., new shares	10 0 0	7 0 0	11 — 11½
23406	10	European (Limited)	10 0 0	8 0 0	15 — 16
12000	10	Do., new shares (Boulogne, Amiens, Rouen, Caen, Havre, & Nantes.)	7 10 0	8 0 0	3½—4½ pm.
4054	10	Foreign and Colonial (Limited)	10 0 0	..	9 — 10
5000	10	Hong Kong (Limited)	10 0 0	10 0 0	13 — 13½
1560000	100	*Imperial*	100 0 0	10 0 0	157—159
26000	12½	Do., new shares	12 10 0	7 0 0	14½— 15½
1300	100	Do., bonds	£100	10 0 0	195 —200
56000	50	*Imperial Continental* (Amsterdam, Berlin, Ghent, Hanover, Lille, Rotterdam, Aix-la-Chapelle, Antwerp, Bordeaux, Brussels, Frankfort-on-Maine, Haarlem, Stolberg, and Vienna.)	43 15 0	9 2 6	53 — 55
3000	40	*Independent*	40 0 0	10 0 0	64 — 66
3000	10	Do.	10 0 0	5 0 0	8 — 9
3000	20	Do.	20 0 0	7 10 0	24½— 25½
	10	Do., D	1 0 0	..	
250000	Stk.	*London*	100 0 0	10 0 0	154 —157
£15000	Stk.	Do., 1st preference	100 0 0	6 0 0	117 —120
	Stk.	Do., 2nd preference	100 0 0	6 0 0	
	Stk.	Do., 3rd preference	100 0 0	6 0 0	
£18781	100	Do., 1st preference stock	100 0 0.	6 0 0	
£11828	100	Do., 2nd preference stock	100 0 0	5 0 0	
15000	5	Malta and Mediterranean (Limited)	5 0 0	5 0 0	2 — 2⅛
6000	5	Do., preference	5 0 0	7 0 0	5 — 5½
20000	5	Mauritius (Limited)	2 0 0	7 0 0	2 — 2⅛
25000	20	Monte Video (Limited)	20 0 0	..	23 — 24
8000	10	Nictheroy, Brazil (Limited)	10 0 0	..	2½—2 dis.
30000	5	Oriental (Calcutta)	5 0 0	9 0 0	6½ — 7
30000	5	Do., new shares	2 10 0	9 0 0	½—1 pm.
10000	5	Ottoman (Limited)	5 0 0	nil.	1⅝— 2⅛
17500	10	Pará (Limited)	10 0 0	7 0 0	7⅞— 8¼
27000	20	*Phœnix*	20 0 0	10 0 0	32 — 33
3600001.	100	Do., new	55 0 0	7 10 0	68 — 70
1440001.	Stk.	Do.	100 0 0	5 0 0	90 — 92
5000	20	*Ratcliff*	20 0 0	10 0 0	31½ — 32¼
34000	20	Rio de Janeiro (Limited)	20 0 0	10 0 0	30 — 32
7359	5	Singapore (Limited)	5 0 0	7 10 0	4½ — 5
2000	5	Do., preference	5 0 0	7 10 0	5½ — 6
1500	32½	Shanghai	32 10 0	12 0 0	30 — 32
4000	50	*South Metropolitan*	50 0 0	10 0 0	84 — 86
4000	12½	Do.	12 10 0	10 0 0	20½ — 21½
20000	12½	Do., new shares	2 10 0	10 0 0	4½—5½ pm.
15000	10	*Surrey Consumers*	10 0 0	10 0 0	15½— 16
10000	10	Do., new	7 0 0	10 0 0	4½— 4⅝
9000	4	United General (Limerick)	4 0 0	2 10 0	1¼—2¼ pm.
1500	10	*Wandsworth and Putney*	10 0 0	10 0 0	14 — 15
1500	10	Do.	10 0 0	7 10 0	11 — 12
2957	10	Do.	10 0 0	7 0 0	
993	10	Do.	3 0 0	7 0 0	
16000	5	*West Ham*	5 0 0	10 0 0	7⅞ — 8¼
16000	5	Do., new shares	1 10 0	10 0 0	3—3¼ pm.
		WATER COMPANIES.			
60000	10	Berlin	10 0 0	11 10 0	19 — 21
12000	100	Chelsea	100 0 0	6 0 0	116 —118
18000	100	East London	100 0 0	6 0 0	120 —121
10000	50	Grand Junction	50 0 0	8 10 0	74—76 x d.
5840	25	Do., ¼ shares	25 0 0	8 10 0	38 — 39
2160	25	Do., new do.; maximum dividend, 7½ per cent.	25 0 0	7 10 0	31 — 33
4396	100	Kent	100 0 0	6 0 0	121 —123
5339	100	Lambeth	100 0 0	6 5 0	120 —121
1161	100	Do.	20 0 0	6 5 0	
442	100	New River	100 0 0	8 0 0	170 —180
4443	100	Do.	20 0 0	8 0 0	36 — 38
4000	100	Do., debenture stock, 4 per cent.	100 0 0	4 0 0	96 — 98
3036	100	Southwark and Vauxhall	100 0 0	5 10 0	99 —101
1296	100	Do., preference stock	100 0 0	5 0 0	100 —101
	100	Do., D shares	100 0 0	5 10 0	98 —100
		Do.	..	4 10 0	
	100	Do., new ordinary	..	4 10 0	
1600	100	Do., new ordinary, No. 1	40 0 0	4 10 0	
13913	61	West Middlesex	61 0 0	£6 per sh.	120—122x d

Price Current.

CASTINGS.—*Per Ton.*

Average Weight of Cast-iron Gas-pipes, per Yard.

1 in.	2 in.	2½ in.	3 in.	4 in.	5 in.	6 in.	7 in.	8 in.	9 in.	10 in.	12 in.
16	21	28	33	51	70	89	107	126	149	177	208 lbs.

Retail Prices are 5 to 10 per cent. higher.	London.	Glasgow.	Newcastle and Middlesboro'.	Wal s.	Yorkshire, Derbyshire, and Staffordsh.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Pig Iron, No. 1 (g.m.b.)	—	5 7 0	6 7 6	6 0 0	6 5 0
1½ and 2 inch Socket-pipes	11 0 0	10 10 0	10 10 0	10 10 0	10 10 0
2½ and 3 inch do.	10 10 0	9 15 0	9 10 0	9 15 0	9 15 0
4 and 5 inch do.	10 0 0	9 10 0	9 0 0	9 10 0	9 10 0
6 inches and upwards, do.	9 10 0	9 0 0	8 17 6	9 0 0	9 0 0
Retorts, 1st fusion, hot blast	10 10 0	9 15 0	10 15 0	9 15 0	9 15 0
Do., 2nd do., cold do.	—	—	—	—	—
Tank Plates, ¼ thick and above	11 10 0	15 0 0	11 0 0	11 0 0	16 0 0

WROUGHT-IRON TUBES AND FITTINGS.

(Subject to 25 per cent. discount.)

Internal Diameter in Inches.	2	1½	1¼	1	¾	½
TUBES.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Assorted, 2 to 14 feet, per foot	1 9	1 2	0 11	0 8	0 6	0 4½
Pieces, 12 to 23¼ inches, each	3 0	2 0	1 8	1 4	1 0	0 9
Do., 3 to 11¼ do.	2 3	1 4	1 1	0 11	0 8	0 6
Longscrews, 12 to 23¼ do.	4 0	2 6	2 0	1 6	1 2	0 11
Do., 3 to 11¼ do.	3 0	2 0	1 3	1 0	0 10	0 8
Bends and Lamp Bends	4 3	2 3	1 9	1 3	0 11	0 8
Springs, various elevations	3 3	1 8	1 4	0 11	0 9	0 7
FITTINGS.						
Square Elbows, equal or reducing	3 6	2 3	1 9	1 2	0 10	0 8
Round Elbows	3 10	2 6	1 11	1 4	1 0	0 9
Tees, equal or reducing	3 9	2 6	1 2	1 3	1 0	0 9
Crosses, do.	5 3	3 6	3 0	2 3	1 9	1 5
Sockets, reducing	1 3	0 11	0 9	0 7	0 6	0 5
Caps and Plugs	1 3	0 10	0 8	0 6	0 5	0 4
Nipples and Backnuts	1 0	0 8	0 6	0 4	0 3½	0 3
Sockets, plain	1 0	0 7	0 6	0 4	0 3½	0 3
Iron Main-Cocks	18 0	11 0	8 6	6 6	4 6	3 6
Syphon Boxes, 2 quarts	23 0	19 0	18 0	17 0	16 9	—

LONDON METAL MARKET.—*Per Ton.*

	£ s. d.		£ s. d.
Copper, tough cake	91 0 0	Tin, English block	121 0 0
Iron, Welsh bar	12 5 0	Tin-plates, best coke I. C.	1 17 0
Lead, English pig	23 15 0	Spelter, foreign	25 5 0

FREIGHTS.

COASTWISE.—*Per Ton.*

Newcastle—	s. d.	s. d.
Chatham and Rochester		—6 6
Cork (per keel)	£12	0 0
Dover, Folkestone, and Ramsgate (per keel)	7	0—8 0
Dublin £13	0	0—
Exeter Quay £10	0	0—
Ipswich		—7 0
London (from Leith)		—7 0
London (Pool)		—7 8
Lowestoft and Yarmouth		—6 0
Portsmouth and Southampton		—8 6
Plymouth (per keel) £8	0	0—
Shoreham		—7 6
Whitstable		—7 9
Weymouth		—7 6

FOREIGN.—*Per Keel.*

	£ s.	£ s.
Barcelona		—17 5
Bordeaux		—13 0
Boulogne and Calais		— 9 10
Cadiz		—12 0
Cronstadt		—10 0
Copenhagen		—11 0
Genoa		—18 10
Hamburg		—10 0
Havre de Grace		— 9 15
Leghorn		—18 0
Lisbon		—13 0
Rotterdam		— 9 10
Stettin		— 9 0
Trieste		—19 10
Venice		—24 10

GAS COALS.—*Per Ton.*

Scotch Cannels, f.o.b.—	s. d.
Boghead, at Bo'ness	77 6
Capeldrae, at Burntisland	53 8
Cowdenbeath, do.	—
Donnibristle, do.	32 0
Kirkness, best, do.	53 8
Lesmahago (Auchin.), at Granton	46 0
Do. (Duke of Hamilton's), do.—	
Main	43 6
Wee	40 0
Do. (Nitshill Co.'s), do., and at Glasgow	47 6
Lochgelly, at Burntisland	—
Milton and Crosshill	38 8
Newcastle (Unscreened)—	
Haswells, Nettlesworth Primrose, and South Pelaw	
Felling, Framwell Gate, North Pelton, Walker's Primrose, West Wear, and Whitwell Primrose	
Burnhope, Charlaw, Derwent, East Castle, Edmondsley, Eighton Moor, Hartlepool Pelaw, Holmside, Lambton's Gas, Lanchester Pelaw, Medomsley, Mickley, New Pelaw, Pelaw Main, Pelton Main, Ravensworth, Seaham, South Moor Pelton, South Leverson, Townley Main, West Pelaw, Wearmouth Hutton, and Witton	
Peareth, Ravensworth Pelaw, Waldridge, West Garesfield, and West Pelton	
Brancepeth, Dean's Primrose, Londonderry Gas, New Pelton, South Peareth, Urpeth, Washington, and West Leverson	
Ramsay's Newcastle Cannel	
Wigan Cannel, f.o.b. at Liverpool	

Scotch Cannels, f.o.b.—	s. d.
Arniston, at Leith	40 0
Billeyford, at Leith	26 0
Elphinstone Tower, do.	30 0
Grange Cannel, at Bridgeness	—
Haywood, at Granton	—
Kinniel, at Bo'ness	35 0
Lanemark, at Glasgow	—
Lochore, at Burntisland	53 6
Myles' do.	—
Pirnie, at Methill	26 6
Waverley Seam, at Burntisland	—
Old Wemyss Cannel, at Wemyss	45 0
Wemyss Rhumes Cannel	22 6
	Per Ton.
	—
	—
	—
	—
	40 0
	40 0

CHEMICALS.

	£ s. d.		£ s. d.
Ammonia—		Iron Salts—	
Sulphate, white and grey	17 15 0	Green and rusty Copperas	3 5 0
Do., brown, 23 per cent.	15 15 0	Dry do.	2 15 0
Benzole, 30 per cent.	0 2 4	Sulphuric Acid	3 10 0
Carbolic acid	0 1 1		

SUNDRIES.

	£ s. d.	£ s. d.
Best Newcastle Fire-bricks, per 1000	—	4 0 0
Do., Fire-clay Retorts, per foot run	0 7 0	— 0 7 6
Cliff's Fire-bricks, at Wortley, per 1000	—	3 10 0
Ingham's best Wortley Fire-bricks, on rail or boat, per 1000	—	3 10 0
Farnley Iron Co.'s Fire-bricks, do., do.	—	3 10 0
Wortley Fire-clay Retorts, per foot run	0 5 6	— 0 7 6
Tarred Rope Yarn, per cwt.	—	
Fraser's best Fire-bricks, f.o.b. at Inverkeithing	—	2 10 0
Do. Retorts, per foot run	0 5 0	— 0 7 6
Do. Ground Fire-clay, per ton	—	0 10 0
Stourbridge Fire-bricks, per 1000	—	3 0 0
Do. Fire-clay, per ton	—	0 12 0

BIRMINGHAM SEWAGE WORKS AT SALTLEY.—The Sewage Committee of the Corporation have so far pushed on their work that the first of the proposed series of sewage tanks is now finished and in operation. The purpose of the arrangement is to clarify the sewage by subsidence. Lime is first mixed with the sewage stream, and this is then allowed to flow into the first compartment of the new tank, where the heavier portions fall to the bottom, the sewage flowing on successively into the other three divisions, and thence into the river. Each part of the new tank is capable of receiving about a million and a quarter gallons of sewage daily; and three other tanks of the same capacity will be required to deal with the whole of the sewage. It was felt, however, that, owing to the cost of such construction, it would not be justifiable to undertake them, until the value of this method had been effectually proved by experience. We are glad to learn that, so far, the expectations of the committee and their scientific advisers have been answered. Mr. Hawksley, C.E., the engineer of the works, visited Saltley on the 5th inst., in company with some members of the Sewage Committee; and, though the weather and the state of the sewage were alike unfavourable, the new tank acted in a most satisfactory manner, the effluent water passing into the river being clear and inoffensive. The mud which is deposited in the tanks is now removed by self-acting buckets; but it is intended for this purpose to use a powerful centrifugal pump, now in course of erection, and nearly ready for operation. When removed, the mud is ploughed into the sewage farm, and thus is prevented from accumulating in the open air, and so repeating the nuisance formerly and justly complained of in the neighbourhood.—*Birmingham Daily Post.*

W. T. ALLEN & CO.,

(LATE TURNER & ALLEN,)

201, UPPER THAMES STREET,

London,

GAS & WATER ENGINEERS.

CONTRACTORS FOR THE SUPPLY OF

LAMP COLUMNS, LANTERNS,

FOUNTAINS, PIPES, &c.,

TO

GAS, WATER, & RAILWAY COMPANIES, LOCAL BOARDS, SHIPPERS, &c.

A Volume of the Newest Designs, with Price Book, forwarded on receipt of 10s.

GAS COAL

AND

HOUSE COAL.

For prices, including Waggon Hire and Railway Rate to any Station or Shipping Port, apply to

MR. PLEVINS,

MONKWOOD COLLIERIES,

NEAR

CHESTERFIELD.

NOTE.—Quotations given for the small, which for Gas and Coke results is equal to the large.

The GRAND MEDAL of MERIT at the VIENNA EXHIBITION has been AWARDED to

GWYNNE & BEALE'S PATENT IMPROVED GAS-EXHAUSTERS,

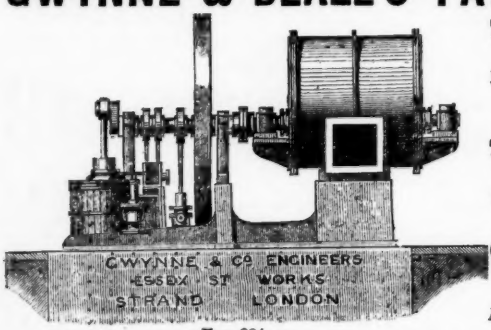


FIG. 224.

The BEST EXHAUSTERS IN THE WORLD.

Made under the personal superintendence of

Mr. BEALE,

The oldest Maker, Inventor and Patentee of GAS-EXHAUSTING MACHINERY.

(It is NOT CORRECT to state that Mr. BEALE has RETIRED.)

Prices and every information on application.

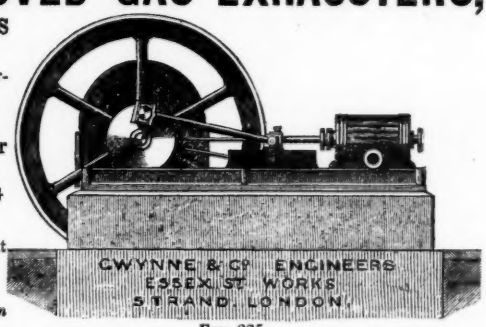


FIG. 225.

Fig. 224 represents one of those erected at the Imperial Gas-Works, Bromley, capable of passing 210,000 cubic feet of gas per hour. Several others of the same size are now on order for the same Company. These Patent Machines combine the highest quality of workmanship and materials, the largest bearings and wearing surfaces, with the **most perfect system of action yet discovered.** Fig. 225 represents one of a series of four at the Nottingham Gas-Works, each passing 52,500 cubic feet per hour. GWYNNE AND CO. *do not pretend to enter into a struggle with other makers in respect to cheapness. They have never sought to make price the chief consideration, but to produce Machinery of the very highest quality, and the most approved design and arrangement.* Their prices have been estimated with a due regard to the **excellence of the article produced,** and when this is taken into consideration, they have no fear for the result. The orders executed this season for Exhausters and alterations to their patented system amount to over 4,000,000 cubic feet of gas passed per hour, and to over 300 horse power for Engines to drive them. In every instance their work is giving the greatest satisfaction. Numerous testimonials and references can be given.

REGULATORS, BYE-PASSES, STOP-VALVES, GAS-VALVES, & MACHINERY FOR GAS MANUFACTURE, OF ALL SIZES,

CAN BE HAD ON APPLICATION TO

GWYNNE & CO., HYDRAULIC & GAS ENGINEERS, ESSEX STREET WORKS, STRAND, LONDON, W.C.

G. & Co. are now manufacturing for a London Gas Company three of their 210,000 cubic feet Patent Gas Exhausters, and many of all sizes.

DUKE OF HAMILTON'S

LESMAHAGOW GAS COAL.

The superior quality of this well-known Cannel, as wrought by

THE NITSHILL AND LESMAHAGOW COAL COMPANY,

Is now generally admitted by all Gas Engineers.

PRICE AND ANALYSIS MAY BE HAD ON APPLICATION TO

JAMES M'KELVIE, HAYMARKET, EDINBURGH.

TO IRONFOUNDERS.

THE Widnes Local Board are prepared to receive TENDERS for the supply of about 1000 yards of each 6-in. and 12-in. Cast-Iron PIPES with plain sockets. The pipes are to be coated both inside and outside with Dr. A. Smith's Patent Black Varnish; the price to include delivery f.o.r. at Widnes.

Further particulars and a tracing may be obtained on application to the undersigned.

Tenders to be addressed to the Chairman of the Gas and Water Works Committee, endorsed "Tender for Pipes," and delivered at the Gas-Works, Widnes, on or before the 23rd inst.

The Board do not bind themselves to accept the lowest or any tender.

T. A. DREW, Engineer.

Gas-Works, Widnes, Jan., 1874.

F. & C. OSLER,

45, OXFORD STREET, LONDON, W.

MANUFACTORY AND SHOW-ROOMS:

BROAD STREET. BIRMINGHAM.

ESTABLISHED 1807.

MANUFACTURERS OF CRYSTAL GLASS CHANDELIERS,

WALL LIGHTS, AND LUSTRES FOR GAS AND CANDLES.

TABLE GLASS OF ALL KINDS.

CHANDELIERS IN BRONZE AND ORMOLU. MODERATOR LAMPS.

THE

BOHEMIAN GAS COMPANY,

LIMITED.

Incorporated under the Companies Acts, 1862 and 1867.

CAPITAL, £100,000, in 1000 SHARES of £100 EACH.

First Issue of 500 Shares, on which a Dividend of 7½ per cent. is guaranteed.

£10 per Share to be paid on Application; £40 per Share on Allotment; £25 per Share on the 1st of April, the remainder on the 1st of July, 1874.

SUBSCRIBERS DESIROUS OF PAYING UP THE WHOLE CALLS AT ONCE MAY DO SO.

Directors.

JOHN ROMANS, Esq., C.E., of Newton Grange, Edinburgh.
GEORGE V. TURNBULL, Esq., Shipowner, and Chairman of the Chamber of Commerce, Leith.
THOMAS GIBSON, Esq., Merchant, 93, Princes Street, Edinburgh, and of Ashton, Dalkeith.
JOHN REID, Esq., Powburn, Edinburgh.
WILLIAM ROMANS, Esq., Gas Engineer, No. 1, Walbrook, London.

Bankers.

THE CITY OF GLASGOW BANK, Edinburgh, and Branches.
THE NATIONAL BANK OF SCOTLAND, Nicholas Lane, London, E.C.

Consulting Engineer.

GEO. WILSON STEVENSON, Esq., C.E., F.G.S., Great George Street, Westminster.

Solicitors.

Messrs. WORMALD & ANDERSON, W.S., 93, Princes Street, Edinburgh.

Interim Secretary.

J. D. WORMALD, Esq., W.S., 93, Princes Street, Edinburgh.

Offices—93, PRINCES STREET, EDINBURGH.

ABRIDGED PROSPECTUS.

This Company is formed for the purpose of acquiring and working the existing Gas-Works of Smichow (Prague) and the concession for the same, granted by the Municipality of that City.

Smichow has a population of about 26,000 persons, and is the manufacturing suburb of Prague, the Capital of Bohemia, in the Empire of Austria. It occupies the same position relatively to Prague as the Borough of Southwark occupies to the City of London, or as Leith to Edinburgh.

The Gas-Works in Smichow were erected about 17 years ago, under a concession granted to Mr. Ringhoffer, the great continental builder of railway carriages and waggons, whose works are in Smichow, who employs more than 3000 workpeople, and who burns upwards of five million feet of gas annually from these Gas-Works. Mr. Ringhoffer himself constructed the Works and then sold his interest in the Concession.

The property promised so fairly as an investment that Mr. W. Romans, Gas Engineer, of No. 1, Walbrook, London, and Mr. G. W. Stevenson, C.E., No. 19, Great George Street, Westminister, went to Prague in July last, and spent a fortnight in making a most thorough and searching investigation of the whole concern; and having satisfied themselves that the Agent's representations had been rather under than over stated, they ultimately concluded arrangements for the purchase of the undertaking by Messrs John and William Romans, of Edinburgh and London.

Since then the conveyance has been completed, by which Messrs. Romans have acquired the freehold of the site, comprising 12,000 square yards, together with the works, mains, services, meters, lamps, business, and the absolute and exclusive monopoly of the supply of Gas in Smichow until Sept. 30, 1897.

The Works have been well designed and substantially constructed, and are now in a state of thorough repair and good going order. There are residences upon the Works for both Manager and Foreman. The good condition of the mains and services may be inferred from the fact that the unaccounted-for Gas is only 11 per cent.

The best coal for Gas purposes can be obtained within ten miles from Prague in unlimited quantity, and is delivered by railway, by means of a siding, into the yard of the Works, at lower prices than they can be obtained in Britain.

From careful and numerous inquiries, it appears that there is no probability of any material advance in the price of coal in this district. The industry is not as yet developed; new pits are being opened, and coal is got in excess of the demand, and Owners and Agents are anxious to enter into contracts to supply for a term of years at somewhat under current prices.

The increase of business during the last three years has been as follows:—

In 1870-71	the sale was	13,800,000	feet.
„ 1871-72	„	18,400,000	„
„ 1872-73	„	23,177,000	„

Since March last about 3000 additional lights have been ordered, and new streets are being laid out and new houses erected.

The terms of the Concession are extraordinarily favourable to the purchasers. The Concessionaire may sell his rights and powers to whomsoever he pleases. He is secured in the absolute monopoly of the supply of gas, and therefore practically of gas-fittings, in Smichow, for twenty-four years from the 1st of October last. The Municipality undertake to give him all the extraordinary powers they possess beyond those of a private individual in enforcing payment of debts, or otherwise in supporting his rights. During the last two years of the term, the Municipality may, by notice, purchase the Works of the Concessionaire, but if a purchase is made, it must be on the commercial principle and have regard to the future profits of the undertakers, and the amount is to be assessed in the same way as any other case of compensation, and paid in cash to the proprietors before taking possession.

A provisional contract has been entered into, dated Jan. 3, 1874, between Messrs. Romans of the one part and the promoters of the other part, by which the promoters have acquired the whole Works, Undertaking, and Concession for the sum of £75,000, under the conditions that the sellers take £10,000 of the price in the Stock of the Company, pay all the preliminary expenses connected with the formation of the Company up to the date of Registration, and guarantee 7½ per cent. to the Shareholders for the first five years.

The Accounts for last year show an Income of £13,944 16s., and an Expenditure of £6112 8s. 9d.; leaving a profit of £7831 17s. 3d., which is equal to 10½ per cent. on the capital of £75,000; but it is confidently expected, from the reports already received, that within the next five years the business will have so increased that the dividend will reach 15 per cent. or more.

Copies of this Contract, and of the Memorandum and Articles of Association, may be inspected at the Offices of the Company.

If no allotment be made, the application money will be returned without deduction. Prospectuses and Forms of Application may be obtained of the Solicitors and Secretary, at the Offices of the Company.

WANTED, in the Provinces, a practical FINISHER of Dry Meters.
Apply to Meter, care of Mr. King, 11, Bolt Court, Fleet Street, E.C.

CLERK OR COLLECTORSHIP.

WANTED, by the Advertiser, aged 29, a situation as above. Thoroughly understands book-keeping. Was engaged in last situation as clerk and collector for eight years. Good references and testimonials.
Address R. B., care of Mr. King, 11, Bolt Court, Fleet Street, E.C.

WANTED, a Gas-Fitter (a married man preferred), to proceed immediately to the Bahia Gas-Works (Brazil). Salary £180 per annum, and contingent advantages.
Apply by letter, addressed to the Directors, marked "Application for Gas-Fitter," stating age, and enclosing testimonials (*copies only*), on or before Tuesday, the 20th of January, 1874.
Bahia Gas Company, Limited, 10, Coleman Street, London, E.C.

COOKING AND HEATING BY GAS,
BY
MAGNUS OHREN, A.I.C.E.

GAS *versus* COAL.
Pamphlet for Gas Companies to circulate amongst their gas consumers to increase day consumption, &c.
Specimen Copy by post 4d., direct from Magnus Ohren, Gas-Works Lower Sydenham, London, S.E.

VINCENT AND CO.'S
PATENT IMPROVEMENTS IN
Apparatus for Manufacturing Gas.
Particulars to be obtained by application to—
Mr. LAYARD JONES,
Engineer,
25, OLD BROAD STREET, LONDON, E.C.

TO GAS COMPANIES.

THE Advertiser, who has just completed an engagement abroad, wishes for a situation as Foreman, Inspector, or Collector. He has a thorough knowledge of the make, fittings, repair of meters, accounts, &c., and can use the photometer. The best references and security if desired.
Address Gas, care of Martin and Co., 54, Percival Street, E.C.

TO PROPRIETORS OF FIRE-CLAY, MANUFACTURERS OF CLAY RETORTS, & OTHERS.

THE Directors of the Rochester, Chatham, and Strood Gaslight Company are prepared to receive TENDERS, which must be delivered at their Office, 56, High Street, Rochester, before Twelve o'clock at noon of Thursday, the 22nd of January, 1874, for the supply of about 600 feet run of CLAY RETORTS and 15 tons of Clay.
The Directors reserve the right to accept or reject any tender, in whole or in part, and will not be bound to accept the lowest or any tender.
By order,
W. Syms, Secretary.
N.B.—Forms of tender may be had on application as above.

ENGINES, BOILERS, PUMPS, & STATION-METER FOR SALE.

THE Dover Gaslight Company invite TENDERS for the PURCHASE of the following:—
1. Two High-Pressure Beam Engines, cylinders 9 in. in diameter, 20 in. stroke, and two sets of Three-Throw Crank Pumps, 5½ in. bore, 14 in. stroke, together with the 6-in. pipes and connexions in the well.
2. Two Wrought-Iron Boilers, 3 ft. 2 in. diameter, and 17 ft. long, with the pipes and fittings.
3. One Station-Meter, in Cast-Iron Cylinder, 6 ft. 6 in. diameter, and 5 ft. 9 in. deep, capable of passing 10,000 to 15,000 cubic feet per hour.
The above are now fixed upon the Trevanion Street Station of the Dover Gaslight Company, and may be inspected by application to the Company's Managers.
Tenders will be received for the whole of the above, or any specified part separately. But a separate price must be put upon the station-meter.
The Company do not bind themselves to accept the highest or any tender.
The tendered price is to be paid to the Secretary before the removal is commenced, and no unnecessary damage is to be done to the Company's property in the removal, which is to be by and at the expense of the purchaser.
Tenders to be delivered at my Office, Snargate Street, Dover, on or before the 30th day of January inst., at Eleven o'clock, marked "Tenders for Engines, &c."
G. Fielding,
Jan. 9, 1874. Secretary, Dover Gaslight Company.

THE Scarborough Gas Company, owing to the removal of their works, will have FOR SALE, about October, 1874, the following APPARATUS, the whole of which is in exceedingly good condition:—
Fittings for 140 Retorts, consisting of mouthpieces, ascension, saddle, and dip pipes, and hydraulic and foul mains.
A Condenser, consisting of 40 12-in. pipes, with top and bottom boxes, and inlet, outlet, and bye-pass valves.
Two Scrubbers, each 7 ft. diameter and 16 ft. high, with valves as before.
Two Purifiers, 8 ft. 6 in. square and 5 ft. deep, 20-in. water lutes.
Two Cast-iron Water-Tanks, respectively 24 ft. by 16 ft. by 4 ft., and 20 ft. by 8 ft. by 4 ft. New in 1865.
Two Horizontal Engines, 4 h. p., two single-flue Cornish boilers, and two 20,000 feet per hour Beale's Exhausters. All new in 1866.
One Station-Meter, by Milne, 20,000 feet per hour. New in 1864.
One Gasholder 80 ft. diameter, in two 24-ft. lifts. About 11 years old.
One Gasholder 50 ft. diameter, in two 22-ft. lifts. Only 4 years old.
Two Governors, by Parkinson, on 12-in. and 10-in. mains.
A considerable length of 10-in. Cast-iron Socket and other Pipes.
An inspection of the above Apparatus is requested by the Officers of Companies requiring enlargements or extensions, and offers to purchase will be duly considered.
By order of the Board,
James Moon,
Manager and Secretary to the Company.

BAHIA GAS COMPANY, LIMITED.

NOTICE is hereby given that an EXTRAORDINARY GENERAL MEETING of the Company will be held at the Offices of the Company, No. 10, Coleman Street, London, on FRIDAY, the 23rd of January inst., for the purpose of considering such propositions and adopting such resolutions as may be then deemed expedient for authorizing a further increase of the capital of the Company, within the powers of the Articles of Association of the said Company.

The chair to be taken at half-past Two o'clock p.m.

By order of the Board,
(Signed) ALFRED J. HEAD, Secretary.

Jan. 13, 1874.

THE Directors of the Sao Pedro (Brazil) Gas Company, Limited, invite APPLICATIONS for the appointment of a MANAGER of their works at Porto Alegre, Pelotas, and Rio Grande do Sul, the lighting of which cities will commence about the end of May next. Candidates who, in addition to the usual qualifications of a Gas Manager, have had practical experience of the country, will be especially eligible. The salary will be not less than £400 per annum.

Applications, with testimonials, to be sent to the Secretary, 60, Gracechurch Street, not later than the 20th inst.

By order,
Jan. 7, 1874. E. P. ROWSELL, Secretary.

THE Directors of the Sao Pedro (Brazil) Gas Company, Limited, invite APPLICATIONS for the appointment of their ACCOUNTANT in Brazil, to arrange and take charge of the books and accounts required to be kept at the Company's stations of Porto Alegre, Pelotas, and Rio Grande, on the commencement of lighting, about the end of May next. The salary will be £250 per annum.

Applications, with testimonials, to be sent to the Secretary, 60, Gracechurch Street, not later than the 20th inst.

By order,
Jan. 7, 1874. E. P. ROWSELL, Secretary.

CORPORATION GAS-WORKS, DARLINGTON.

STATION-METER FOR SALE.

THE Gas Committee of the Darlington Corporation have for SALE a STATION-METER made to pass 12,000 cubic feet of gas per hour, hydraulic valves, bye-pass, pressure and water-line gauges, and tell-tale index complete.

This meter has only been in use a few years, and is in good order, and is for sale in consequence of having been superseded by a larger one. The meter may be seen at the Darlington Gas-Works.

Offers to be forwarded to the undersigned.

By order, WM. B. EMMERSON, Engineer.

COST PRICE SHEETS.

MANUFACTURE AND DISTRIBUTION OF GAS. These sheets are the same as were laid before the Dublin Meeting of the British Association of Gas Managers; but in the REPRINT, NOTES have been added for the guidance of those using them. Copies of the two sheets may now be had, price 5s.

South Shields. W. J. WARNER.

BAILEY'S Patented Inventions are now in extensive use wherever steam is known. Bailey's Patent Steam Gauges, Pyrometers, Water Gauge Cocks, Test Pumps, Fusible Plugs, Steam and Water Valves, Safety Valves, Junction Valves, Pumps, Tell-Tales, Recorders, Lightning Conductors, Electric Telegraphs, Turret Clocks, Steam Joint Cement, Lifting Jacks, Boiler Feeders, Lime Catcher and Separator, Injectors and Ejectors, and every description of first-class Brass Work for Engines and Boilers. Gas-Works Managers who have not our large book should send for it.

16th edition, 1000 engravings, 4to., post free 2s. in stamps, weight 10 oz., cost of production £1000,

BAILEY'S Illustrated Inventions, containing details and prices of goods in our five several departments:—(1) Brass Foundry, Steam Gauges, Indicators, Feeders, and Fittings; (2) Engineers Sundries, Small Tools, and Stores; (3) Machine Pump and Fire Engine; (4) Turret Clock, &c.; (5) Electric Telegraph, A B Instruments, Bells, and Apparatus.

J. BAILEY and Co., Albion Works, Salford, LANCASHIRE.

BRONNER'S PATENT GAS-BURNERS give 99 per cent. of light, as compared with 27 per cent. given by ordinary burners, with equal consumption of gas.—*Vide* "Gas Referees Report," published June, 1869.

HENRY GREENE AND SON, Sole Consignees of Brönner's Patent Improvements in Gas Lighting, 16 and 17, King William Street, LONDON, E.C.

ADDISON POTTER,

WILLINGTON QUAY,
NEAR NEWCASTLE-UPON-TYNE,
Manufacturer of
CLAY RETORTS, FIRE-BRICKS, AND EVERY DESCRIPTION OF FIRE-CLAY GOODS.

B. CARPENTER,

THE ORIGINAL MANUFACTURER OF

WOOD SIEVES

FOR

GAS PURIFIERS & SCRUBBERS.

WORKS:

22, HERMES STREET, PENTONVILLE ROAD,
LONDON, N.

FIRE BALLS! FIRE BALLS!! FIRE BALLS!!!

THE BEST ECONOMIZERS OF FUEL.

Apply to the Manufacturer,

W. C. GIBSON,
43, SIDE,
NEWCASTLE-ON-TYNE.

J. & J. BRADDOCK,

GAS ENGINEERS,

GLOBE METER-WORKS, OLDHAM,

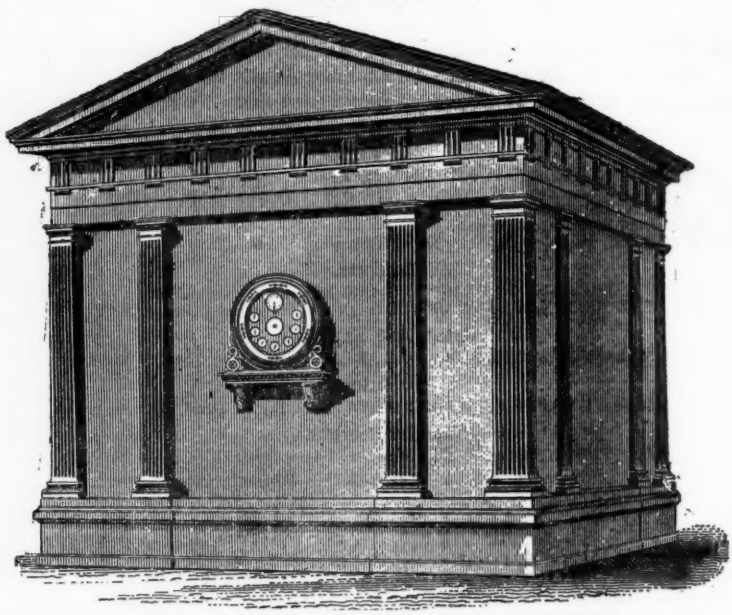
MANUFACTURERS OF

WET & DRY CONSUMERS GAS-METERS

OF THE HIGHEST EXCELLENCE;

ROUND STATION-METERS,

ON CAST-IRON STANDS.



SQUARE STATION-METERS,

WITH PLANED JOINTS.

GOVERNORS, GAUGES, INDICATORS, MAIN COCKS, &c.

GAS COOKING APPARATUS.

WATER-METERS SUITABLE FOR ALL PRESSURES.

Home and Foreign Orders promptly attended to.

All Sizes of CONSUMERS METERS, STATION-METERS, and GOVERNORS generally in Stock.

Orders almost invariably despatched on the day of receipt.

TERMS, &c., ON APPLICATION.

JAMES MILNE & SON,

GAS ENGINEERS,

Gas-Meter, Gas Apparatus, and Gas-Fittings Manufacturers,

EDINBURGH, AND

2, KING EDWARD STREET,

NEWGATE STREET, LONDON.

STATION-METERS, GOVERNORS, CONSUMERS METERS, GAS LUSTRES, CHANDELIERS, BRACKETS, &c.,

And every description of Gas-Fittings and Gas Apparatus.

GEORGE ANDERSON,

GAS AND CONSULTING ENGINEER,

19, NORTHUMBERLAND STREET, STRAND, W.C.

MR. ANDERSON advises Companies on all matters connected with the manufacture of Gas and the construction of Works.

PATENTEE and MANUFACTURER of the following Inventions:—

RETORT SETTINGS, heated by tar without the production of smoke.

STEAM-ENGINES and EXHAUSTERS, separately or combined.

FOUR-WAY VALVES, one of which is equal to three ordinary Valves.

STATION GOVERNORS—the Gasholder cannot tilt and cause accident.

BREEZE AND TAR FUEL MACHINE.

A Pamphlet containing Eighteen Illustrations of the foregoing, with letterpress on the construction of Works, post free, 2s. 6d.

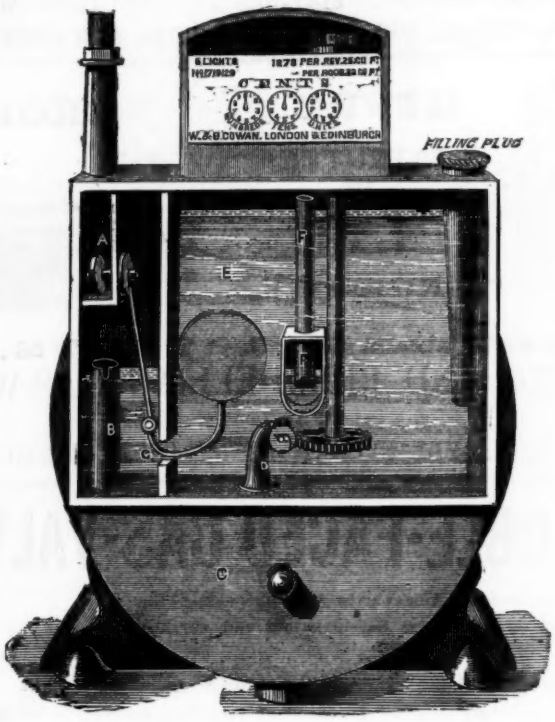
N.B.—The second edition of this Work, *now ready*, co illustrations of the Machine for converting Breeze and Tar into Fuel for heating the Retorts.

"The Author is well qualified to speak authoritatively upon the important subjects to which his pamphlet refers."—*Artizan.*

ESSON'S

PATENT COMPENSATING GAS-METER,

IN TIN CASE, PATENT SIDE VALVE ARRANGEMENT.



DESCRIPTION.

The gas passes from the valve-box A by the overflow-pipe B into the waste water box C, and upwards through the spout D to the measuring drum; E is the compensating fountain, in which also is the float, the lever of which, passing through the hole G, opens and shuts the valve.

When the water level in the meter lowers, the *bottom end* of the air or gas tube F becomes unsealed, thereby admitting air or gas into the upper part of the fountain, which, causing water to pass through the hole G, restores the level in the meter, when this action ceases.

The float and valve are beyond the influence of either inlet or outlet pressure, and the fountain is large enough for a year's supply.

SOLE MANUFACTURERS,

W. & B. COWAN,

WET AND DRY GAS-METER MANUFACTURERS,

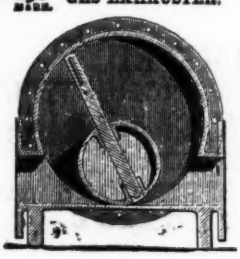
(ESTABLISHED 1827,)

King Henry's Walk,
BALLS POND ROAD,
LONDON, N.

BUCCLEUCH ST. WORKS,
EDINBURGH.

TRADE MARK

J. BEALE'S PATENT GAS EXHAUSTER.



BEALE'S CONTINUOUSLY ACTING
GAS EXHAUSTERS
ARE NOW MANUFACTURED BY
B. DONKIN & CO.

MR. J. BEALE, of East Greenwich, having retired from business, has made an arrangement with B. DONKIN & CO. for the sole manufacture of his Patent Solid-Slide Gas Exhausters.

B. D. & Co. also make Steam-Engines to drive Gas Exhausters direct or otherwise, and Gas-Valves.

Estimates and Prices on application to

B. DONKIN & CO.,
ENGINEERS & IRONFOUNDERS,
BERMONDSEY, LONDON, S.E.

MR. WILLIAM DORE (19 years Gas Engineer and Accountant) may be CONSULTED upon all matters relating to the manufacture and distribution of gas, and the management, accounts, or transfer of gas undertakings.
Office, 4, Picton Place, Neath, SOUTH WALES.

Mr. ALFRED LASS,
60, CORNHILL, LONDON, E.C.,
Is prepared to open the Books, and, if necessary, keep the Accounts of Gas and Water Companies.
To examine the Books and Accounts, and prepare Balance-Sheets for the information of Directors.
To assist Secretaries in preparing Balance-Sheets, according to the "Gas-Works Clauses Act, 1871;" or may be consulted with respect to Accounts generally.

TO INVENTORS AND PATENTEES.

MR. W. H. BENNETT, having had considerable experience in matters connected with Gas, Water, and Sanitary Improvement, begs to say that he continues to assist Inventors in the perfection of their designs, and to obtain for them PROVISIONAL PROTECTION, whereby their invention may be secured for Six Months; or LETTERS PATENT, which are granted for Fourteen Years.
Patents completed, or proceeded with at any stage, thereby rendering it unnecessary for persons resident in the country to visit London.
Patents procured for Foreign Countries.
Information as to cost, &c., supplied gratuitously upon application to the Advertiser, 42, Parliament Street, WESTMINSTER.

SOCIETY OF ARTS TECHNOLOGICAL EXAMINATIONS.
An Examination in the Technology of the Manufacture of Gas will be held (in connexion with the Examinations of the Science and Art Department) in May next.
Intending Candidates should apply for programmes (which will be sent gratis) to the Secretary of the Society of Arts, John Street, Adelphi, LONDON, W.C.

Demy 32 mo., oblong, pp. 34.

HOW MUST I MANAGE THE GAS?
By J. O. N. RUTTER.
Second Edition.
Intended for Gas Companies to give to their Customers.

Prices: 1000 copies, £4 4s.; 100 copies, 10s., free by post.
Apply to J. O. N. RUTTER, Black Rock, BRIGHTON.

Demy 16mo., Sixty-four pages,

ADVANTAGES of GAS. By J. O. N. RUTTER. A new edition.—201st Thousand. Brighton: Published by the Author.
This little book is intended for distribution by Gas Companies and the manufacturers of gas apparatus. It has done good in making known the benefits and promoting the sale of gas; and it is hoped that its usefulness might be continued and greatly extended.
Prices:—1000 copies, £3; 500 copies, £4 5s.; 250 copies, £2 5s. Any smaller number at 20s. per 100 copies.
A specimen copy free per post for three penny stamps. Covers printed specially.
Apply to J. O. N. RUTTER, Black Rock, BRIGHTON.
Nov. 13, 1871.

TO GAS COMPANIES.

PATENT FUEL AND LIME CEMENT FROM GAS LIME.
This invention (protected by three patents) consists in a new method of turning the foul lime of Gas-Works to profit. The process is very simple and inexpensive, and can be worked by Gas Companies at a very small outlay.
By simply mixing the foul lime with tar it is converted in the first instance into an excellent fuel. By burning this fuel a very valuable material for building purposes is obtained, which can be used either as lime or cement or plastic. When used as cement it will be found equal to the best Portland in durability and hardness.
Licences to work the invention will be granted by the Patentee to Gas Companies on very reasonable terms.
For further particulars apply to Mr. E. MADDOCKS, Manager of the Gas-Works, KETTERING.

THOMAS CARR & SON,
MANUFACTURERS OF
FIRE-BRICKS, LUMPS, TILES, RETORTS, &c., &c.,
SCOTSWOOD FIRE-BRICK WORKS,
NEAR
BLAYDON-ON-TYNE.

INTERNATIONAL EXHIBITION, 1862.
CLASS X.
PRIZE MEDAL
For excellence of Fire-Clay Gas Retorts, and
"HONOURABLE MENTION" for
good quality of Fire-Bricks.
WILLIAM STEPHENSON & SONS,
THROCKLEY,
NEWCASTLE-ON-TYNE.

OXIDE OF IRON.—We are prepared to supply, on moderate terms,
HYDRATED PEROXIDE OF IRON (BOG OCHRE),
Same quality as supplied by us to several of the most extensive Gas Companies, and which has given entire satisfaction.
FRANCIS RITCHIE & SONS,
BELFAST.

TO GAS COMPANIES, ENGINEERS, &c.
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These Sieves are made with parallel or bevel bar, and guaranteed to be well seasoned yellow deal, and not common spruce so generally used.
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Manufactory for every description of Casting and Machinery for Gas-Works and Water-Works.

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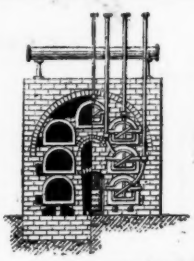
AND ALL MATERIALS FOR GAS MANUFACTURE AND DISTRIBUTION.



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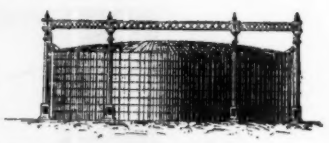
FOR



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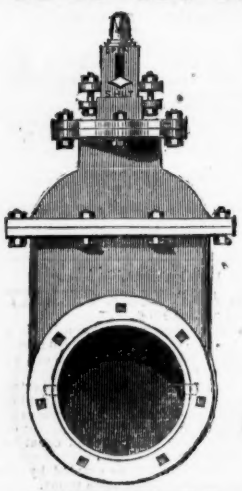
Of any extent, at Home or Abroad,
Address, 7, ARGYLE STREET, KING'S CROSS, LONDON, W.C.

C. & W. WALKERS' DOUBLE-FACED GAS-VALVES.



These solidly constructed double-faced Gas-Valves are superseding the old system of the light, single-faced disc, which is too uncertain and unreliable in large bores.

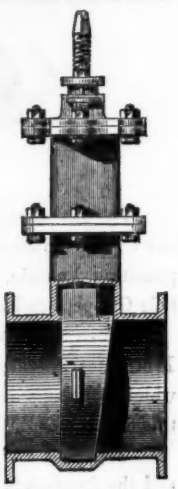
They are guaranteed absolutely gas-tight. They are very massive and rigid, and by improved modes of manufacture they are produced at very little excess in cost over the old light, weak system, which is liable to spring and bend, and become leaky.

The Valve is a rigid wedge of solid cast iron, having two perfectly scraped surfaced facings fitting between the two on the body, which are also surfaced.

A spring in two short halves, and, therefore, not liable to break, is used only for scraping the front facing clean.

The front facing is vertical; the back facing forms the wedge.

At a slight additional expense both flanges are faced to bolt to main-pipes.



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WOOD SIEVES FOR PURIFIERS,

Which have now been in use for more than ten years, and their advantages and durability fully established. They are made entirely by steam machinery in very large quantities at the most moderate cost.

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IN THE
PURIFICATION OF ILLUMINATING GAS,
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The only Purifying Material which removes, by one process, all Ammonia and Sulphuretted Hydrogen. It has been in use for upwards of four years at some of the largest Gas-Works in the Kingdom.

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SPENCE'S PATENT GAS DEODORIZER;
SULPHATE OF AMMONIA, GREY AND BROWN; SULPHURIC ACID; MUDIE'S DISINFECTANT, &c.
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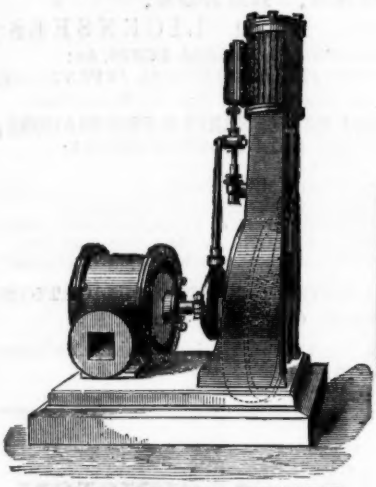
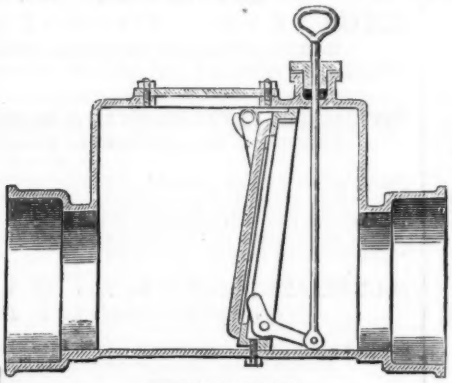
TAR AND LIQUOR PUMPS,

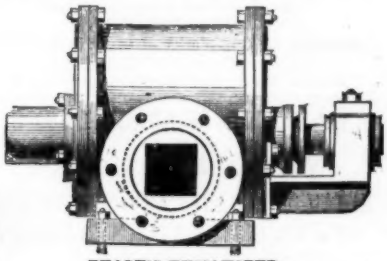
VALVES, COAL LIFTS, STEAM HOISTS, RETORT-HOUSE TOOLS, &c.



COMBINED ENGINE & EXHAUSTER.

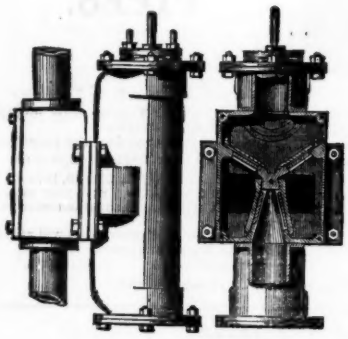


BYE-PASS VALVE.

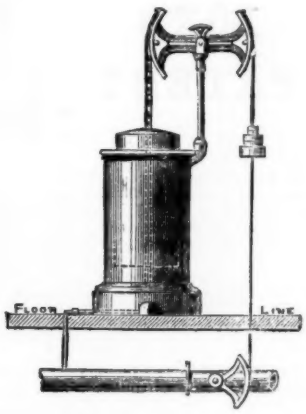


BEALE'S EXHAUSTER.

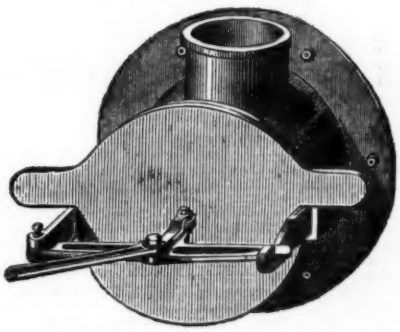
GAS-VALVE.



TAR and LIQUOR PUMPS.



HYDRAULIC REGULATOR.



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Also ORDINARY WELDED WROUGHT-IRON TUBES and FITTINGS,

FOR GAS, STEAM, & WATER, EITHER BLACK, GALVANIZED, OR ENAMELLED.

CORE BARS FOR IRONFOUNDERS, STOCKS, TAPS, AND DIES, IRON COCKS, &c.

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AGENTS FOR THOMAS GLOVER & CO.'S
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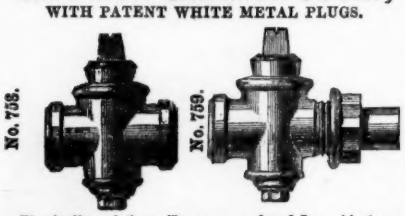
DELIVERY F.O.B. ON CLYDE.
Lists on application.

LAMBERT'S
CAST-IRON GAS-MAIN COCKS,
WITH PATENT WHITE METAL PLUGS.


The bodies of these Taps are made of Iron, black or galvanized, and the Plugs of Patent Metal. They are warranted not to set fast or corrode as do iron or brass Cocks, will always work easily, are strong, well made, durable, of little or no intrinsic value, and, therefore, not likely to be stolen; and the PRICES are (especially upon the larger sizes) FULLY 50 PER CENT. LESS THAN BRASS COCKS.
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Stocks, Taps, and Dies, and Every Description of Gas-Fitters Tools; Gas Slide and Sluice Valves;
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Manufacturers of GAS-RETORTS, GLASS-HOUSE FURNACE & BLAST-FURNACE BRICKS, LUMPS, TILES, and every description of FIRE-BRICK.
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Successors to
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Is now in use in Moorgate Street, Cheapside, and Trafalgar Square, and has been in successful operation upon Waterloo Bridge since Oct. 7, 1871.
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INVENTOR AND PATENTEE.

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GAS, STEAM, AND WATER FITTINGS.

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MAKERS, BY SPECIAL MACHINERY, OF PATENTED MECHANICAL INVENTIONS,
Comprising numerous Labour-saving Appliances and Economizers of Fuel and Motive Power;
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AWARDED
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"For Improved Construction, Excellence of Material, and Superior Workmanship;"
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"REDUCTION IN PRICES OF PEET'S VALVES, consequent upon largely increased sales."
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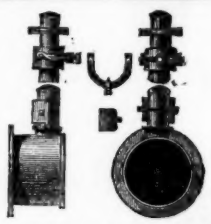
Samples of Specialties may be inspected at Stand No. 542, Group XIII., in the English Machinery Annexe of the Vienna Exhibition, 1873. For List of same see German Official and "British Section" Catalogues.

BOX'S PATENT

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By the adoption of the improved ascensions and joints the trouble and annoyance of "jumping" stopped pipes is entirely obviated, while the time and labour saved will in a very short time amply compensate for the slight additional expense entailed in fitting them to existing apparatus.
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IRON, BRASS, COMPOSITE, AND LEAD TUBES, FOR GAS AND WATER,
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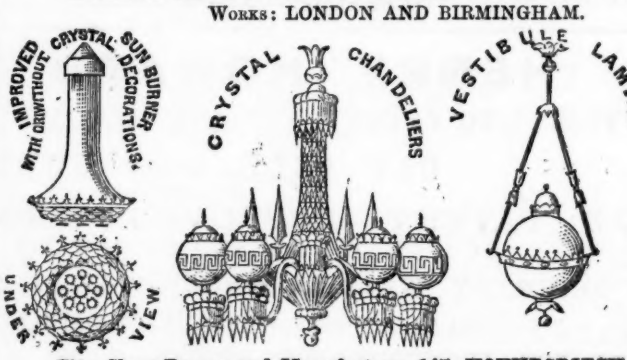
STREET LAMPS AND COLUMNS IN GREAT VARIETY.
WORKS: LONDON AND BIRMINGHAM.


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Of every description.
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POPE & PEARSON'S GAS COAL.—We have now the authority of several of the most eminent Gas Engineers of London in stating that our Coal yields *in practical working over 10,000 cubic feet of gas, with an illuminating power of 16 candles;* or by the standard burners now used by the London Gas Companies, an illuminating power equal to 17⅓ candles.
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COPPA COLLIERY, MOLD,
Beg leave to call the attention of Gas Companies to the superior quality of their
CANNEL FOR GAS-MAKING PURPOSES.
This Cannel produces in actual working, in iron retorts, 9200 cubic feet of 32-candle gas, and upwards of 11 cwt. of coke, and in clay retorts will produce 11,500 cubic feet of 25·9-candle gas.
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Of superior quality, delivered at any station in England and Wales.
Purified gas per ton of coal in cubic feet (average) 10·375
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Delivery per Rail to any Part.

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ALL CLASSES OF
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SUPPLIED BY
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Prices Quoted on application.

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STATION-METERS, ALL SIZES, up to 15 feet Square, with PLANED JOINTS;

Experimental Meters, Photometers, Pressure-Gauges,
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IMPROVED DRY METERS, STATION-METERS, GOVERNORS,

PATENT LAMP-REGULATORS,

EXPERIMENTING METERS, PRESSURE-GAUGES, &c.

London: Printed by WILLIAM BOUGHTON KING (at the office of Clayton and Co., 17, Bouverie Street, Fleet Street); and published by him at No. 11, Bolt Court, Fleet Street, in the City of London.—Tuesday, January 13, 1874.